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INDEX TO LITERATURE.

In the following index all articles from foreign sources are indicated by the numbers prefixed being in bold-faced type. All those having numbers with the ordinary type relate to American literature.

A.—WORKS OF A GENERAL NATURE.

654. [ANON.] **Bovine actinomycosis or "lump jaw."** <Am. Agric., vol. L, New York, Jan., 1891, p. 52, fig. 5.

Gives brief historical notes on the disease and describes its character. Due to a fungus. Notes mode of infection, treatment etc. (J. F. J.)

655. [ANON.] **The late F. W. Anderson.** <Am. Agric., vol. LI, New York, Feb., 1892, p. 152, 1 col., port.

Sketch of the life of F. W. Anderson, formerly connected with the Department of Agriculture and later associate editor of the American Agriculturist. (J. F. J.)

656. BIZZOZERO, CARUEL, GIBELLI, PASSERINI, FRINCHESE E TODARO. **Relazione sul concorso al premio Reale per la Morfologia normale e patologica, per l'anno, 1888.** <Atti reale Accad. Lincei, Anno 288, ser. 4, vol. VII, Rome, 7 giugno 1891, pp. 532-543.

Gives discussion of volumes 4-7 of Saccardo's Sylloge Fungorum Omnium, with regard to its claim for the royal prize. Decided to give half the prize to Saccardo and the other half to G. B. Grassi, a zoölogist. (W. T. S.)

657. [EDITORIAL]. **Fungus-eating.** <Nature, vol. XLV, London, Nov. 26, 1891, pp. 75-76.

A notice of M. C. Cooke's "British Edible Fungi," giving a statement of its general scope. Notes that 200 species of British fungi are edible and about 50 of these are considered as dainties. A paragraph is quoted to the effect that no general rules are to be laid down to distinguish edible from poisonous species. (J. F. J.)

658. FAIRCHILD, D. G. **Index to North American mycological literature.** <Jour. of Mycol., vol. VI, Washington, May 14, 1890, pp. 42-44; Sept. 10, 1890, pp. 80-87; Jan. 6, 1891, pp. 128-135; April 30, 1891, pp. 184-191; vol. VII, Sept. 10, 1891, pp. 52-63.

A list, by authors, of papers relating to mycological literature, with brief notes on contents, beginning with January 1, 1890. Now merged in the present index. (J. F. J.)

659. GALLOWAY, B. T. **The work of the United States Department of Agriculture, especially in its relation to plant diseases and injuries to crops through unfavorable weather conditions.** <Hartford Times, Conn., Jan. 27, 1892.

Abstract of a paper read before the Pomological Society of Connecticut, giving an outline of the work of the Department. Various plant diseases discussed and general reference made to value of predictions of frosts by Weather Bureau. (J. F. J.)

660. HALSTED, B. D. **Botany at the Washington meetings.** <Am. Nat., vol. XXV, Phila., Oct., 1891, pp. 914-916.

Mentions the papers, with brief note of contents, read before various societies in Washington, D. C., from August 12 to 29. Many of the papers treated of fungi, of diseases of plants, or of preventives for disease. (J. F. J.)

661. POPE, FRANK M. **Micro-organisms in their relations to the higher animals.** <Trans. Leicester Lit. and Phil. Soc., new ser., vol. II, Leicester Jan., 1891, pp. 256-262.

Gives brief account of history of micro-organisms. Mentions divisions of fungi as (1) Mold fungi; (2) Mycetoza; (3) Yeast fungi, and (4) Fission fungi. Gives brief account of each class giving De Bary's classification of parasitic fungi as obligatory parasites, facultative parasites, and obligatory saprophytes. Notes the presence of mold fungi as more common in plants than animals, but mentions in the latter *Empusa*, *Laboulbenia*, and *Saprolegnia*. Describes effects of bacteria on animal organisms. (J. F. J.)

662. Sorauer, Paul. **Das phytopathologische Laboratorium zu Paris.** <Zeitsch. für Pflanzenkrankheiten, vol. I, Stuttgart, 1891, p. 51.

Notices the establishment of a laboratory for the study of plant diseases at Paris by order of the Minister of Agriculture on August 24, 1888. Prillieux is director, Delacroix assistant in laboratory work. The laboratory is at 16 Rue Gay-Lussac, in Paris. (W. T. S.)

663. Sorauer, Paul. **Der Antrag Schulz-Lupitz im preuss. Abgeordnetenhause betreffend die Errichtung einer Versuchsanstalt für Pflanzenschutz.** <Zeitsch. für Pflanzenkrankheiten, vol. I, Stuttgart, 1891, pp. 54–62.

Gives synopsis of a stenographic report of a speech of Schulz-Lupitz in the Prussian Chamber of Deputies, favoring the establishment of a central station for the study of plant diseases. Sorauer opposes this plan, and thinks it better to establish a number of scattered independent stations, giving as reasons that the study can be best carried out in the place where the disease occurs and by investigators familiar with local conditions; that it is difficult to obtain necessary appliances in case an investigator is sent from a central station to the center of disease; that it promotes scientific progress to have investigators free and not under a single head as at a central station, and that local diseases can be recognized and stopped before they attain sufficient importance to demand attention from a central station. (W. T. S.)

664. Ward, Marshall. **Two lectures on "Parasitic plants, native and exotic."** <Quar. Rec. Roy. Bot. Soc. London, vol. IV, Lond., April, May, June, 1891, pp. 150–153.

In the second lecture notes are given on parasitic fungi. One attacking *Vaccinium* and one the lily are especially noted. (J. F. J.)

(See also, Nos. 869, 880.)

B.—DISEASES OF NONPARASITIC OR UNCERTAIN ORIGIN.

665. [Anon.] **Cure for the yellows.** <Popular Gardening, vol. VI, Buffalo, Sept., 1891, p. 251.

Notes discussion in regard to disease in a meeting of the Conn. State Board of Agriculture, between Hale and Meech. Former claims pruning and muriate of potash can cure it; Meech claims not. (D. G. F.)

666. [Anon.] **Dreading peach yellows.** <Am. Gardening, vol. XIII, New York, Feb., 1892, p. 128, $\frac{1}{5}$ col.

Quotes from circular of horticultural commissioners of Yuba County, Cal., advising against importation of trees from outside the State. (J. F. J.)

667. [Anon.] **Mysterious vine disease.** <Rural Californian, vol. XV, Los Angeles, Mar., 1892, p. 129, $\frac{1}{5}$ col.

Refers to work of N. B. Pierce on the disease, noting the necessity of using cuttings from healthy vines, and from regions outside locality where the disease exists. (J. F. J.) (See also Cal. Fruit Grower, etc., San Francisco, vol. X, Mar. 5, 1892, p. 154.)

668. [Anon.] **[Take all.]** <Agric. Gaz. N. S. Wales, vol. II, Sydney, Sept., 1891, pp. 556–557.

Mentions a disease of wheat which is often spoken of at farmers' meetings and in the press. A number of specimens were examined, but no conclusion was reached. (M. V.)

669. [Anon.] **The issue on peach yellows.** <Pacific Rural Press, vol. XLIII, San Francisco, Jan. 16, 1890, p. 52.

Editorial on the exclusion of eastern-grown peach trees; shows that exclusion of all eastern trees is absolutely necessary to keep out yellows. Notes are given from Bulletin No. 1, of the Division of Vegetable Pathology, in regard to the communicability of yellows. (B. T. G.)

670. [Anon.] **The peach yellows.** <Cult. and Country Gent., vol. LVI, Albany, Nov. 19, 1891, p. 436, $\frac{1}{2}$ col.

Refers to yellows being transferred from diseased to healthy trees by pruning knife. Disease is sometimes mild, frequently virulent. Cases mentioned where it appeared in trees widely separated. Only remedy so far known is cutting out and burning. (J. F. J.)

671. Dodge, G. M. **Root knot on apple trees.** <Insect Life, vol. II, Washington, April, 1890, p. 315.

Mentions occurrence of knots on roots of apple trees supposed to have come from Kansas. May and may not have been caused by a nematode. (J. F. J.)

672. [Editorial.] **The peach yellows.** <Rural Californian, vol. XV, Los Angeles, Mar., 1892, p. 142, 1 col.

Quotes opinion of Meehan that yellows is caused by *Agaricus melleus*. Argues against the idea and states that the climate of parts of California is certainly favorable for the growth of Agaricus and fruit-growers should be careful about the importation of trees. (J. F. J.)

673. [EDITORIAL.] **The two puzzles. Pear blight.** <Cult. and Country Gent., 61st year, Albany, Dec. 3, 1891, p. 976, ½ col.

Refers to peach yellows and pear blight and concludes only method of eradication is to cut off and burn diseased parts. Mentions cutting out of diseased wood of pears and advantage resulting from better cultivation of remainder of orchard in producing better fruit. (J. F. J.)

674. [GOETHE, R.] **Einige Ursachen durftigen Wachsthums der Obstbäume.** <Ber. K. Lehranst. für Obst- und Weinbau zu Geisenheim am Rhein, für d. Etatsjahr 1889-90, Wiesbaden, 1891, pp. 38–40, fig. 1.

As a cause of stunted growth of young nursery trees gives the differences existing between stock and scion. Recommends selection of seed for stocks from vigorous parents and the rejection of all stunted stocks. A common cause of stunted growth is too deep planting. Such deeply set trees are not only stunted, but were liable to diseases and to attacks of insects. Mentions that deep-set trees are more likely to have "Krebs" or in case of stone fruits "gummosis." Such plants also suffer first from frost. Even if planted only 5 cm. too deep the tree suffers. One may suppose the injurious effects of deep planting are due to the injurious effects of the soil moisture on the bark of the buried portion, or that they are due to the hindering of respiration of this portion of the bark, causing stagnation of the sap. One thing is certain, the flow of sap is hindered through the buried stem and causes the production of watersprouts and roots here. Lack of moisture may also be the cause of the trouble. (W. T. S.)

675. "INDIGATOR." **Die-back.** <Fla. Disp., Farmer and Fruit Grower, new ser., vol. III, Jacksonville, Jan. 29, 1891, p. 85.

Gives analyses of soil upon which die-back of orange does and does not exist, showing that soil where it exists has more organic matter and more phosphoric acid than the one on which it is not known. (D. G. F.)

676. JÖNSSON, BENGT. **Om brannfläckar på växtblad.** <Bot. Notiser, Lund, 1891, pp. 1–16, 49–62, pl. 2.

Burnt spots on leaves of plants, which are kept in green or hot houses, have been recorded in the oldest phytopathological literature. Several theories have been given to explain their origin, and the author shows by experiments that the oldest theory, that the burnt spots are caused by the action of the sun's rays through air-bubbles in the glass, is entirely correct. Among the different theories, enumerated and discussed by the author, the following might be mentioned; De Candolle (Physiologie végétale, III, p. 1113) thought that the water might soften the tissue of the leaves and then by being heated in the sun prevent the evaporation and produce burnt spots. Sorauer (Pflanzenkrankheiten, 2nd ed., I, p. 456) says that when drops of water are left upon leaves of plants in hothouses without draught and exposed to the sun, they cause burnt spots. Other authors, Neumann (Adansonia, vol. II, 1862) and Frank in part (Die Krankheit. d. Pflanzen, 1880, p. 174) believed that the drops of water merely by their own heat could produce the burning, but Frank was not unwilling to suppose that the drops might also have the same effect as lenses. Hoffmann (Samenbruch bei der Weinbeere, Bot. Ztg., 1872, p. 113) had observed that grapes upon which drops of water had been left became burnt, and he thought that the drops had really acted as lenses, concentrated the sunlight and produced the burning, and this theory has also been given by Von Thümen (Ueber den Sonnebrand der Rebenblätter, Die Weinlaube, 1886, pp. 409–410). The author has now examined these different theories and he has proved that drops, fallen upon leaves, are unable to burn, since they represent but half a lens, and they are not able to burn by their own heat, since this is far from being strong enough to disturb the tissues. The only acceptable explanation is that poor glass with air bubbles produces the burning, although he is not quite unwilling to see some cause in drops of water which are hanging down from the inside of the glass. (Theo. Holm.) (See Bot. Gaz., vol. XVII, Mar. 17, 1892, pp. 89–91.)

677. MAY, WALTER. **Die Rohrzucker-Culturen auf Java und ihre Gefährdung durch die Sereh-Krankheit.** <Bot. Zeit. 49 Jahrg. Leipzig, Jan. 2, 1891, pp. 10-15.

After giving a general account of the soil and climatic conditions in Java in reference to the culture of sugar cane, the author describes the Sereh-disease. It appeared in Java in 1879-1880 but did not cause much damage until five years later, when it spread rapidly over almost the entire island, causing immense loss. Since then the disease has prevailed to greater or lesser extent every year. The outer symptoms of the disease are given thus: The stems remain short, the leaves are crowded, many branches and aërial roots are produced; the diseased plants do not develop a tall upright stem, but form a small fan-shaped tuft of leaves. In the worst cases no cane is produced, only leaves; certain tissues of the diseased plants become reddened, and cuttings taken from such plants show an increased redness and finally decay. The checked growth of the diseased plants brings about a diminished sugar content and the sugar present is difficult to secure. As to the cause of the disease no generally accepted explanation has been put forth. Nematodes, bacteria and even methods of culture newly introduced have been supposed by different writers to be the cause. The best means of combating the malady at present known is to obtain sets from Sereh-free regions such as Borneo. (W. T. S.)

678. MCCALLAN, C. W. [and HOWARD, L. O.]. **The Bermuda peach maggot and orange rust.** <Insect Life, vol. III, Washington, Nov., 1890, pp. 120–121.

Describes disease of oranges. Trees die from limb to limb in one year. New shoots also die rapidly and in three or four years the tree is entirely dead. This is said to be die-back. Disease yields to treatment with carbolic or creosote washes "provided the existing cause is removed, and this latter is variously ascribed to over-fertilization, deep planting and imperfect drainage." (J. F. J.)

679. [MEEHAN, T.] **Peach yellows.** <Meehan's Monthly, vol. I, Germantown, Pa., Oct. 1891, p. 55, ⅓ col.

Considers disease due to *Agaricus melleus.* (J. F. J.)

680. [MEEHAN, T.] **Peach yellows.** <Meehan's Monthly, vol. II, Germantown, Pa., Feb. 1892, p. 27, ½ col.

Refers to fears of spread of peach yellows in California. Considers disease due to *Agaricus melleus.* "We would just as soon expect to hear of the peach yellows in California as we would to hear of an acre of pineapples being produced in Maine." (J. F. J.)

681. RÁTHAY, EMERICH. **Ueber eine merkwürdige durch den Blitz an Vitis vinifera hervorgerufene Erscheinung.** <Denkschr. d. math. naturw. Classe d. K. Akad. d. Wissensch. Bd. LVIII, Wien, 1891, pp. 26, pl. I-II.

An interesting and exhaustive paper on the remarkable effects produced by lightning on *Vitis vinifera.* The author discusses the autumnal coloration of grape foliage, the coloration as a result of mechanical injuries to the leaf veins, the petioles and shoots, coloration due to lightning and various questions concerning the effects of lightning on vines grown under glass. The paper concludes with the following summary:

(1) According to observations hitherto made, lightning in graperies, as in herds of sheep, does not single out individuals but strikes large numbers; (2) the tips of shoots struck by lightning die, while the parts lower down survive, at least for some time; (3) the assertion of Colladon's, which is doubted by Caspary, that the foliage of the vine is reddened by the effects of lightning, is correct in regard to all vines whose foliage shows red coloration in the fall; (4) the latter is peculiar to *Vitis sylvestris*, is furthermore to all purple and certain red varieties of *Vitis vinifera* and finally to certain, but by no means all purple, varieties of American vines; (5) vines that redden in the autumn also do so as a result of mechanical injuries to the leaf-nerves, petioles, and stems. Girdling, bending, and partial severing of the latter, produces a red discoloration of all leaves above the injured parts; (6) the reddening of vine leaves after receiving mechanical injuries is not conditioned by a diminished transportation of water; (7) vine leaves, that assume a red color as a result of mechanical injuries, transpire much less than green leaves; (8) the red coloration of vine leaves caused by lightning, resembles in every respect that occurring as the result of mechanical injuries; (9) the change in color is only an indirect result of lightning caused by the latter killing the tissue found on the outside of the cambium in the middle pieces of numerous successive internodes, which corresponds to a repeated girdling; (10) the cambium of the shoots affected by lightning continues to live and produces, in an outward direction, a callus within the deadened tissues, surrounded with cork, while in an inner direction it produces a ring of wood, which is separated from the older wood by a thin brown layer; (11) according to the observations of many, the berries struck by lightning dry up completely. (B. T. G.)

682. SAHUT, FÉLIX. **Les végétaux considérés comme des thermomètres enregistreurs.** <Ann. Soc. d'hort. et d'hist. nat. de l'Hérault, 2 sér. tome XXIII, Montpellier, May, June, 1891, pp. 158-178.

Discusses the effect of cold on introduced plants from observations made in southern France during a period of more than thirty years. The conclusions are as follows: (1) All other conditions being the same, individuals whose wood is well ripened will resist cold more than those whose wood is not well ripened. Individuals of some tender species will be affected more or less by the same degree of cold according as they are in a more or less active state of vegetation. (2) Given a specific fall of temperature, plants, for the most part at least, will be much more seriously affected if the air be moist than if it be dry. (3) With equal temperatures, other conditions remaining the same, the effects of cold will be more destructive if the trees and plants be violently shaken by the wind at the time of a great fall of temperature. Plants which will resist 12° in still air may freeze at 8° in windy weather. (4) The effects of a given lowering of temperature will be destructive in proportion to the persistence of the cold. (5) The resistance to cold of a woody plant increases in proportion to its arborescence. (6) In like conditions, also, a sickly plant will be more sensitive to cold than a healthy one. Chlorotic vines, for instance, are much more subject to cold than healthy ones placed side by side. (7) Observations must not be confined to a single individual. In different individuals of every species the resistance to cold varies appreciably. The author believes it is possible by an intelligent selection carried on for a number of generations to create in many species of plants races less tender than those we are familar with. (E. F. S.)

683. SMITH, ERWIN F. **The peach rosette.** <Jour. Mycol., vol. VI, Washington, April 30, 1891, pp. 143-148, pl. VIII-XIII.

Describes a disease similar in its appearance and effects to peach yellows, mentioning points of resemblance and difference. Occurs in Georgia and Kansas. Does not consider it due to attacks of insects, as has been supposed. The disease is contagious, and affected trees should be dug out and burned. (J. F. J.)

684. SMITH, ERWIN F. **What to do for peach yellows.** <Jour. Mycol., vol. VI, Washington, Mar., 1890, pp. 15-16.

Mentions experiments made with fertilizers, which do not warrant recommending any special treatment. Only plan suggested is to dig out and burn affected trees. (J. F. J.)

685. "VIOLET." **The violet disease.** <Am. Florist, vol. VI, Chicago and N. Y., Feb. 18, 1892, p. 590, 1 col., fig. 1.

Gives experience in raising violets and says, "keep the cold water off your violet foliage and you will have no disease." (J. F. J.)

686. Vöchting, Hermann. **Über die Abhängigkeit des Laubblattes von seiner Assimilations-Thätigkeit.** <Bot. Zeit., 49 Jahrg., Leipzig, Feb. 20, 1891, pp. 113-125, Feb. 27, 129-143, pl. 1, (III.)

Experimented with *Mimosa pudica*, *Solanum tuberosum*, *Tropæolum lobbianum*, *Dolichospermum halicacabum*, and an ornamental cucurbit. In all cases a part of the stem was placed in a space containing air free from CO_2 and exposed as usual to the sun. In every case old leaves already formed when introduced into CO_2-free air turned yellow, and in many cases fell off. The young leaves formed in CO_2-free air showed abnormal shape, size, and color, but differed from etiolated leaves. Such leaves did not recover when the plant was placed in normal atmosphere again. Shows plainly that leaves are dependent on their own assimilation for growth beyond a certain stage of development, and also that they must assimilate to support themselves when fully grown. (W. T. S.)

687. Wadsworth, C. D. **Is the violet disease a myth?** <Amer. Florist, vol. VII, Chicago and N. Y., Dec. 31, 1891, p. 443, ½ col.

Gives experience with violets and believes the so-called disease is due entirely to "wrong treatment, or some parasite, insect, or something of that nature attacking the plants." (J. F. J.)

688. Wadsworth, C. D. **The violet disease.** <Am. Florist, vol. VII, Chicago and N. Y., Feb. 25, 1892, p. 624, ⅓ col.

States failure to grow violets and concludes it to be due to the soil used. (J. F. J.)

(See also Nos. 739, 752, 758, 759, 766, 774, 775, 777, and 781.)

C.—DISEASES DUE TO FUNGI, BACTERIA, AND MYXOMYCETES.

I.—RELATIONS OF HOST AND PARASITE.

689. Arcangeli, G. **Sopra i tubercoli radicale delle leguminose.** <Atti reale Accad. Lincei Anno 288, ser. 4, vol. VII, Rome, Mar. 15, 1891, pp. 223-227.

Review of recent work on root tubercles of Leguminosæ. Says Woronin did not discover bacteria in the tubercles, but instead Gasparrini, who published in 1851 in Atti acad. sc. d. Napoli, t. VI, as was recently noted by Pirotta. (W. T. S.)

690. Darmstædter, Ludwig. **Der Schutz der Pflanzen und Thiere durch Wachse und Fette.** <Prometheus, Jahr. II., vol. XXXVI, Berlin, 1891, pp. 572-574.

Looks upon wax forming the bloom in many plants and a thick coating in some, as a protection against parasites. The wax is not glycerine-ether but combinations of fatty acids with higher fatty alcohols. (W. T. S.)

691. Kionka, H. **Die Wurzelknöllchen der Leguminosen zusammenfassender Bericht über die Gesammte diesbezügliche Litteratur mit besonderer Berücksichtigung der neueren.** <Biol. Centralbl. Bd. XI, Leipzig, June 1891, pp. 282-291.

A good resumé of recent work on the subject of root tubercles of Leguminosæ. (W. T. S.)

692. Magnin, Ant. **Sur quelques effects du parasitisme chez les vegetaux.** <Comp. rend. Acad. d. Sci., vol. CXIII, Paris, Nov. 30, 1891, pp. 784-786.

In reply to criticisms by M. Vuillemin, M. Magnin explains that in speaking of the smutted flowers of *Lychnis dioica*, he used the term hermaphrodite in a morphological rather than physiological sense. The anthers are not filled with pollen grains but always with spores of *Ustilago*. Some additional facts confirm M. Vuillemin's observations: (1) The possibility of local infection, suspected by M. Rose and verified by M. Vuillemin, must also be admitted for *Euphorbia cyparissias* and *E. verrucosa*, emasculated by *Uromyces pisi* and *U. scutellatus;* (2) as in case of *L. dioica*, the parasite which causes stamens to appear in the neuter flowers in *Muscari comosum* only increases the size of organs which exist already in a more or less atrophied form in the neutral flowers of healthy plants; (3) ovaries have never been observed in the smutted staminate flowers of *Lychnis vespertina* or *Muscari comosum*, and this is another proof that whenever such changes take place the rudiments of the organs must have been present. The smut exerts a remarkable indirect effect on the peduncles of the staminate flowers in *Lychnis*. In the healthy staminate plant the flower falls early and the peduncle quickly dries. On the contrary in the pistillate plant the peduncle persists until after the dissemination of the seeds. Now, in parasitized staminate flowers the peduncle also persists quite a long time after anthesis, simulating the pistillate flowers. (E. F. S.)

693. [Meehan, T.] **Bacteria and plant diseases.** <Meehan's Monthly, vol. II, Germantown, Pa., Jan., 1892, p. 8, ⅓ col.

Notes general belief that bacteria are sole cause of disease. This has not been demonstrated. Believes they may hasten disease in plants while not causing it. (J. F. J.)

694. Taylor, John. **Grafting reputed blight-proof apples on blighty stocks.** <Agric. Gaz. N. S. Wales, vol. II, April, 1891, p. 224.

Mentions successful experiment made in grafting reputed blight-proof apples on "blighty" stocks. (M. V.)

(See also Nos. 711, 807, 855, 871, 873, 894, and 981.)

II.—DISEASES OF FIELD AND GARDEN CROPS.

695. [Anon.] **Botany.** <Univer. Rec., Univ. of Michigan, vol. 1, Ann Arbor, April, 1891, pp. 16–17.

Notices laboratory studies of A. C. Eycleshymer, upon club root (*Plasmodiophora brassicāe*) of cruciferous plants, and of W. H. Rush on *Peronospora gangliformis.* (See Nos. 885, and 377.) (D. G. F.)

696. [Anon.] **Peronospora hyoscyami.** <Wiener illust. Gart.-Zeit., 16 Jahrg., Wien, März, 1891, p. 130.

Short notice stating that *Peronospora hyoscyami* is found in Europe almost exclusively on *Hyoscyamus*, but news is received from Australia that it is doing great damage to tobacco. Bordeaux mixture is recommended as a preventive measure. (W. T. S.)

697. [Anon.] **Rust in wheat conference.** <Agric. Gaz. N. S. Wales, vol. II, Sydney, July, 1891, pp. 403–406.

Gives many recommendations for the immediate attention of the farmer, as for example, general experience shows that early sown wheat frequently escapes rust when late does not. (M. V.) (See also Agric. Jour. Cape Colony, vol. V, June 2, 1892, pp. 44–45: this Journal, pp. 287–289.)

698. [Anon.] **Smut in wheat.** <Bull. No. 32, Dept. Agric. & Immigration, Winnipeg, Feb. 25, 1892, pp. 8.

Notes two kinds of smut in wheat, loose or black smut and bunt or stinking smut. Describes the two diseases and their reproduction. Under head of "treatment" suggests use of sulphate of copper (1 pound to 8 quarts of water for 8 bushels of seed): spread on floor and sprinkle with solution and then sift on dry lime to hasten drying. Seed may also be treated in a vat. (J. F. J.)

699. Atkinson, G. F. **A new root-rot disease of cotton.** <Insect Life, vol. III, Washington, Mar., 1891, pp. 262–264.

Describes a disease due to a species of Nematode worm, *Heterodera radicicola*. The external characters are similar to those caused by the fungus *Ozonium*. (J. F. J.)

700. Atkinson, Geo. F. **Anthracnose of cotton.** <Jour. Mycol., vol. VI, Washington, April 30, 1891, pp. 173–178, pl. XVII, XVIII.

Gives detailed description of fungus causing the disease (*Colletotrichum gossypii* Southw.) (See No. 732). (J. F. J.)

701. Barclay, A. **Rust and mildew in India.** <Jour. Bot., vol. XXX, London, Jan. 1892, pp. 1–8, pl. 1, 2 diagrams.

Refers to extent of injury from rusts, etc., in all parts of the world. Quotes from Bolley as to occurrence in the United States, and notes its being found in India, Australia, Japan, etc. Estimates loss to wheat growers in India at nearly 3,000,000 rupees annually. (J. F. J.)

702. Bolley, H. L. **Potato scab, a bacterial disease.** <Proc. Am. Asso. Adv. Sci., vol. XXXIX, Salem, Mass., July, 1891, pp. 334–335.

Abstract giving a statement of contents of paper. Concludes the bacterial origin of disease to be proved by finding (1) a specific bacterium in the true scab; (2) raising diseased tubers from diseased seed and tubers free from disease from treated seed; (3) raising healthy tubers by isolation in same hill where all others became diseased; and (4) producing disease in healthy tubers by artificial infection. (See also, Nos. 119, 120, 121.) (J. F. J.)

703. C[hurchill, G. W.]. **Anthracnose of the bean.** <Cult. and Count. Gent., vol. LVII, Albany, N. Y., Feb. 4, 1892, p. 88, ½ col.

Refers to appearance of beans affected by the disease, and recommends that they be soaked before planting in solution of 3 oz. carbonate of copper dissolved in one quart of ammonia and diluted with 4½ gallons of water. The beans should be soaked in the solution for one hour. (J. F. J.)

704. Cobb, N. A. **Notes on diseases of plants.** <Agric. Gaz. N. S. Wales, vol. II, Sydney, May, 1891, pp. 285–287.

Describes diseased horse-radish plants attacked by *Cystopus candidus*, and recommends as remedies rotation of crops and clean cultivation. Pulverized lime, flowers of sulphur, and eau celeste might also be tried. Recommends clean cultivation, destruction of diseased plants, and rotation of crops for diseases of maize caused by *Ustilago maydis* and *Puccinia maydis*. Under head of diseased lucerne, caused by *Sphærella destructiva*, refers to remedies previously given. (See No. 705.) Says in regard to "water core" of apple that it is not a fungus disease, but is due to lack of air and too much water. (M. V.)

705. Cobb, N. A. **Pathological notes.** <Agric. Gaz. N. S. Wales, vol. II, Sydney, Feb., 1891, pp. 107–108, fig. 4.

Under subhead "A Disease of Lucerne" (*Sphærella destructiva* B. and B.), speaks of part of host attacked, the appearance and amount of the disease. Describes briefly microscopical appearance and germination of spores. Recommends good surface drainage and a rapid succession of close mowings. Reference is also made to sphæriaceous fungi and wheat rust spores, which have been scattered by currents of air and are found on red incrusted fence rails, together with a species of lichen, which is the true cause of the red color. (M. V.)

706. Cobb, N. A. **Pathological notes.** <Agric. Gaz. N. S. Wales, vol. II, Sydney, April, 1891, p. 215.

Gives a popular description of maize affected with rust, the probable cause being *Puccinia maydis*. States also that apple scab may be almost entirely prevented by spraying trees once every two or three weeks in spring and summer with modified eau celeste. (M. V.)

707. [Editorial.] **The potato disease.** <Mediterranean Nat., vol. I, Malta, Sept., 1891, p. 54, ⅓ col.

Notes two diseases affecting potatoes, one caused by *Phytophthora infestans*, the other by a bacterium, *Clostridium butyricum*. The last disease may be arrested by placing the potatoes, after they are dug, in "a light, dry, airy place." (J. F. J.)

708. Falconer, William. **Some notes on the celery crop.** <Cult. and Country Gent., vol. LVII, Albany, Jan. 14, 1892, pp. 28–29, ⅔ col.

Notes rusting of celery on Long Island; this prevents early blanching. (J. F. J.)

709. [?Fawcett, W.] **Coffee-leaf disease.** <Bull. Bot. Dept. Jamaica, No. 22, Kingston, July, 1891, p. 3, ½ p.

Notes the danger of introduction of *Hemileia vastatrix* into Jamaica, and gives proclamation relative to destruction of coverings of tea chests to prevent introduction of the fungus spores from Java or Ceylon. (J. F. J.)

710. [?Fawcett, W.] **Dr. Burck's method of treatment of the coffee-leaf disease in Java, [with notes].** <Bull. Bot. Dept. Jamaica, No. 22, Kingston, July, 1891, pp. 3–10.

An abstract, with notes, from a paper by Burck published in the "Javaasche Courant." States the disease is due to a fungus, *Hemileia vastatrix*, which attacks the lower surfaces of the leaves and gains entrance to the interior through the stomata. The spores develop only in water and in darkness, light and moisture together being destructive to them. The infection of the leaves is described and suggestions are made for cure or prevention. The third pair of leaves on each branch, is the one first attacked. If taken in time and the diseased spot punctured with a needle having on its tip a small amount of sulphuric acid, or if it be cut out with a pair of scissors made especially for the purpose, the disease can be checked. It can also be prevented by spraying with copper sulphate, sulphate of quinine and tobacco water. The expense of treating plants is very slight, not exceeding 1½ guilder cents each from the time of sowing until coming into bearing. Planting hedges so as to intercept the wind is also recommended. (J. F. J.)

711. [?Fischer, A.] **Agricultural prospects generally.** <Agric. Journ. Dept. of Agric. of Cape Colony, vol. IV, Cape Town, Jan. 14, 1892, pp. 156–157.

Report from Graaff-Reinet states that rust is injuring wheat, some farmers reporting one-third of a crop lost. At Humansdorf nearly all soft wheat perished with rust, but hard wheat, such as Blaauw-Horn withstood the rust. Oat hay was injured by rust. At Peddie rust is reported bad on hard wheat; beans "rusted" in some parts of the district. The earlier varieties of grapes "are affected with rust." At Steynsburg and Uniondale rust is reported on wheat to some extent. (W. T. S.)

712. [?Fischer, A.] **The wheat crop.** <Agric. Journ. Dept. of Agric. of Cape Colony, vol. IV, Cape Town, Jan. 14, 1892, pp. 155–156.

Additional reports from seed inspectors are given. Rust is reported as destructive at Dooren Kloof and Tarkastad in the eastern districts. At Dooren Kloof "the rust was worse this year than it has been for years; several people just burnt off their wheat to clean the lands; others cut it off for bedding for their horses. Even the best wheat reaped was rusty." (W. T. S.)

713. Galloway, B. T., and Southworth, E. A. **Preliminary notes on a new and destructive oat disease.** <Jour. Mycol., vol. VI, Washington, Sept. 10, 1890, pp. 72–73.

Give notes on a disease of oats caused by bacteria. Inoculations with the bacteria produced characteristic features of the disease in five days. Cultures yielded the typical organism in a nearly pure condition. (See abstract in Proc. Am. Asso. Adv. Sci., vol. 39, July, 1891, Salem, Mass., p. 333, six lines.) (J. F. J.)

714. Halsted, B. D. **Black rust of cotton.** <Am. Agric., vol. L, New York, Oct., 1891, p. 539, ⅔ col.

A notice of various diseases to which cotton is subject and a special reference to a new disease produced by *Macrosporium rugricantium* Atkinson. Advocates keeping plants in good condition so as to ward off attacks of disease. (J. F. J.) (See No. 246*a*.)

715. Halsted, B. D. **Experiments with sweet potatoes.** <Cult. and Country Gent., vol. LVII, Albany, Jan. 14, 1892, p. 28, 1½ col., 1 diagram.

Gives results of experiments with various manures and fertilizers on black rot and soil rot. (J. F. J.)

716. Halsted, B. D. **Fungous diseases of various crops.** <Eleventh Ann. Rept. N. J. Agric. Ex. Sta., New Brunswick, 1891, pp. 345–366, fig. 3.

Gives notes upon various diseases of garden and ornamental crops. Notes presence of *Phytophthora infestans* as destructive in various parts of the State; also presence of the parasite in potatoes sent from Ireland. Notes occurrence of the bacterial blight of Burrill and refers to the scab described by Thaxter and Bolley. Records *Plasmodiophora brassicæ* Wor., upon cabbage and radish, and for the first time in America *Peronospora parasitica* DBy., on leaves of cabbage and *Hesperis matronalis*. Notes also *Macrosporium brassicæ* Berk., on cabbage. *Cystopus candidus* (Pers.) Lév., is recorded as doing damage on radish, and a *sclerotial* disease of turnips and carrots is noticed. A bacterial disease of salsify is spoken of as quite widespread in the State and likely to prove very contagious. *Botrytis parasitica* and *Urocystis cepulæ* are reported as doing damage to onions and onion sets. Notes presence of *Cercospora flagilleformis* E. & Hals., n. sp. on spinach, and reviews work done in Bull. 70 of N. J. Ex. Sta. (See No. 135). Gives figures of *Phyllosticta hortorum* Speg., on the eggplant, where it causes serious losses, together with *Glœosporium melongenæ* E. & E. Figures, with description *Glœosporium piperatum* E. & E., and *Colletotrichum nigrum* E. & Hals., and notes a species of *Phyllosticta*, all three on the foliage of the pepper. Notes presence at Piscataway of *Septoria armoraciæ* Sacc., and *Ramularia armoraciæ* Fl., on leaves of horse radish. Discusses diseases of the cultivated hollyhock, *Puccinia malvacearum* Mont., *Cercospora althæina* Sacc., and *Colletotrichum malvarum* (B. & Casp.,) Southworth. The violet (*V. odorata*) diseases are reviewed shortly and mention made of *Cercospora violæ* Sacc., *Phyllosticta violæ* DBy., *Glœosporium violæ* B. & Br., and *Zygodesmus albidus* Ell. & Hals. The fungi especially troublesome to carnations mentioned are *Septoria dianthi* Desm., and *Vermicularia subeffigurata* Schw. *Cercospora resedæ* Fckl., on cultivated mignonette is mentioned as controlled by Bordeaux mixture. The black knot of plum and cherry trees is treated of and reference made to Bull. No. 78 N. J. Agric. Ex. Sta. Quotes report of J. M. White who was successful in the treatment of his Clairgeau and Deil pears for leaf-blight and cracking by use of ammoniacal solution, 6 oz. copper carbonate in 100 gallons of water. Mr. White estimates the cost of treating an orchard of 100 apple trees thirty to forty years old five times with carbonate of copper at about $20. (See Exper. Sta. Rec., vol. III, Dec., 1891, pp. 306-308.) (D. G. F.)

717. Halsted, B. D. **Soil-rot of the sweet potato.** <Cult. and Country Gent., vol. LVI, Albany, N. Y., Mar. 5, 1891, p. 148, 1 col., fig. 1.

Gives popular description of disease with possible remedies. (See No. 53.) (D. G. F.)

718. Halsted, B. D. **The black-rot of the sweet potato.** <Cult. and Country Gent., vol. LVI., Albany, N. Y., Feb. 5, 1891, p. 104, 2 cols., fig. 1.

Gives popular description of disease of sweet potato caused by *Ceratocystis fimbriata* Ell. & Hals. (See No. 53.) Reviewed in Popular Gardening, Buffalo, N. Y., vol. VI, Apr., 1891, p. 128. (See No. 264.) (D. G. F.)

719. Halsted, B. D. **The scab of potatoes.** <Am. Agric., vol. LI, New York, Mar., 1892, p. 171, 1 col.

Gives a list of various theories advanced to account for scab. Concludes that real cause is a fungus. Gives outline of work of Bolley, Thaxter, Humphrey, and others, and mentions means advocated for its prevention. (J. F. J.)

720. Halsted, B. D. **The southern tomato blight.** <Miss. Agric. and Mechanical Col. Exper. Sta., Bull. No. 19, Jan., 1892, Agric. Col., pp. 1-9, 11-12.

Describes disease and gives experiments in inoculation of tomatoes from diseased potatoes, and *vice versa*. Seedlings also experimented with, with rather unsatisfactory results. The conclusions are that the blight is due to a *bacterium*, probably the same as that causing the potato disease; that it is also the same as the blight of cucurbits, and can be transferred from one to the other, and that spraying with Bordeaux mixture will probably prove a remedy or preventive. (See Gard and Forest, vol. v., Mar. 2, 1892, p. 108; Exper. Sta. Rec., vol. III, May, 1892, p. 702.) (J. F. J.)

721. Halsted, B. D., and Fairchild, D. G. **Sweet potato black-rot.** <Jour. Mycol., vol. VII, Washington, Sept. 10, 1891, pp. 1-11, pl. I-III.

Describe the external appearance, characteristics, cultures, inoculations, probable life history, and preventive measures. The latter are selections of healthy seed potatoes, healthy sprouts for transplanting from hot bed, rotation of crops, burning of refuse, sparing use of barnyard-manure, and dipping roots in ammoniacal solution of copper carbonate before storing in bins for winter. (J. F. J.)

722. Harvey, F. L. **Causes of potato scab.** <Ann. Rept. Maine Agric. Ex. Sta., part IV, Orono, Dec. 31, 1890 (1891), pp. 115-117.

Reviews work of Thaxter and Bolley on subject. (See No. 311. Also Exper. Sta. Record, vol. III, Jan., 1892, pp. 395-396.) (D. G. F.)

723. Kellerman, W. A. **Rusts and smuts of wheat.** <Farm, Field and Stockman, vol. XV, Chicago, Feb. 13, 1892, p. 151, 1½ col.

Gives brief outline of life history of rust and smut, and recommends immersion of seeds in water heated to from 132° to 135° for prevention of smut. (B. T. G.)

724. Lagerheim, G. de **La enfermedad de los pepinos.** <Revista Ecquatoriana, tom. II, Quito, Dec., 1890, pp. 1-6.

Relates to a disease of Pepinos (*Solanum muricatum*) in Ecuador caused by *Phytophthora infestans*. A general account of the fungus is given, together with notes on distribution, hosts, remedies, etc. The author adopts Mlle Libert's name, *Phytophthora devastatrix*, on the ground of priority. (B. T. G.)

725. LAGERHEIM, G. DE. **Remarks on the fungus of a potato scab.** <Jour. Mycol., vol. vii, No. 2, Washington, Mar. 10, 1892, pp. 103-104.

The disease is caused by *Spongospora solani* Brunch., and was noticed in potatoes purchased in Quito, Ecuador. Describes minute characters of the fungus and gives a short synonymy of the species, concluding it should be known as *Spongospora subterranea* (Wallr.). (J. F. J.)

726. [MEEHAN, T.] **The potato disease.** <Meehan's Monthly, vol. ii, Germantown, Pa., Jan., 1892, p. 13, ½ col.

Notes that spores of fungus do not penetrate the plant, but, falling to the ground, are carried to tubers by the rain and cause rot. Spores seldom penetrate the ground more than 4 inches, and hilling up the vines as early as possible in the season is recommended as a preventive of rot. (J. F. J.)

727. PAMMEL, L. H. **New fungous diseases of Iowa.** <Jour. Mycol., vol. vii, No. 2, Washington, Mar. 10, 1892, pp. 95-103.

Discusses fungi affecting cereals, fruits, and forest trees. Under the first are considered diseases of wheat, barley, timothy, brome grass, Panicum, and clover. Under fruit diseases are considered plum scab or black spot, anthracnose of currants, clustercup of gooseberries, black knot of plums, and white rust of beets. Under forest trees are discussed blight of *Æsculus*, cedar apple fungus, and walnut-tree diseases. (J. F. J.)

728. PAMMEL, L. H. **Potato scab.** <Orange Judd Farmer, vol. xi, Chicago, Jan. 9, 1892, p. 19, 2 col., fig. 1.

Gives popular résumé of recent investigations of Bolley and Thaxter upon the disease. (See Nos. 311, 120, and 121.) (D. G. F.)

729. PECK, C. H. **The potato rot fungus.** <Cult. and Count. Gent., vol. lvii, Albany, N. Y., Feb. 4, 1892, p. 85, ½ col.

Refers to losses caused by potato rot and to the value of Bordeaux mixture as a preventive. Gives formula. (J. F. J.)

730. PRILLIEUX & DELACROIX. **La nuile, maladie des melons, produite par le Scolecotrichum melophtorum, nov. sp.** <Bull. Soc. Mycol. France, vol. vii, Paris, Dec. 31, fasc. 4, 1891, pp. 218-220, fig. 1.

Gives description of external appearance of the diseased fruit and technical description of the fungus. Notes its successful cultivation in artificial media. (E. A. S.)

731. S——. **Die Kartoffelkrankheit in Irland.** <Naturwissensch. Wochenschr., vol. vi, Berlin, Aug. 30, 1891, p. 358.

Notices a disease affecting potatoes in Ireland caused by *Peziza sclerotiorum*. (J. F. J.)

732. SOUTHWORTH, E. A. **Anthracnose of cotton.** <Jour. Mycol., vol. vi, Washington, Jan. 6, 1891, pp. 100-105, pl. 1 (iv), fig. 1.

Disease due to a new species of fungus described under name of *Colletotrichum gossypii*. Mentions external appearance and effect on the boll. Botanical characters and general notes. States there is reason to fear it will be difficult to prevent disease by fungicides. (J. F. J.)

733. [SWINGLE, W. T.] **[Rust of cereals.]** <U. S. Dept. of Agric., Div. of Veg. Path., Cir. No. 12, Washington [Dec., 1891], p. 1.

A circular of inquiry to ascertain the amount of wheat rust in the country, varieties attacked, remedies, etc. (J. F. J.)

734. WEED, C. M. **The smut of oats.** <Am. Agric., vol. li, New York, Mar., 1892, pp. 183-184, figs. 4.

Notes losses from smut in different years and localities and states it can be prevented, as discovered by Jensen, by soaking in hot water. Gives brief life history of fungus, with account of microscopic characters and remedies. The best method is treating seed with hot water at a temperature of 133° F. for five or ten minutes. (J. F. J.)

735. WEED, C. M. **Wheat "scab."** <Am. Agric., vol. l, New York, Dec., 1891, p. 693, 1 col., figs. 2.

Describes appearance of wheat affected by scab. Due to species of *Fusisporium*. Mentions great loss resulting from the disease. (J. F. J.)

736. WORONIN, M. **Ueber das "Taumelgetreide" in Süd-Ussurien.** <Bot. Zeit., 49 Jahr., Leipzig, Feb. 6, 1891, pp. 81-93.

In 1888 the author's attention was called to a serious disease of grains in South Ussuria, and in 1889 he received specimens from Wladywostok, together with drawings and descriptions of the fungi occuring thereon made by N. Paltschewsky and N. Epoff. Gives a short review of the literature of similar diseases of grains, stating that the appearance of "intoxicating grain" is no new phenomenon, it having been previously reported from Germany and Sweden. The diseased grain, when eaten, produces in men a serious disease; the principal symptoms being pain in the head, vertigo, nausea, loss of sight, etc. In South Ussuria besides rye, wheat, oats, millet, etc., were diseased, and not only men, but also animals were affected by eating the grain. The following were found on the diseased grain: *Fusarium roseum* Lk., *Gibberella saubinetii* Sacc., *Cladosporium herbarum* Lk., *Helminthosporium* sp., *Epicoccum neglectum* Desm., *Trichothecium roseum* Lk., *Eurotium herbariorum* Lk., *Micrococcus* sp. [causing red grains], *Hymenula glumarum* Cke. & Horke., *Sphærella* or *Didymella*, *Cladochytrium graminis* Büsg. Besides these, some unidentified forms are enumerated, one of which, a black stroma, looked extremely like *Puccinia graminis*, which latter fungus was almost entirely absent. All of the fungi, except *Puccinia graminis* and *Cladochytrium graminis* (both of which were rare), are saprophytes, and are probably not the direct cause of the disease, which is considered to be due to the damp summer weather, inducing molding of the grain during curing. As a preventive measure, the practice of the neighboring people—Chinese and Coreans—is recommended. This consists simply in drying the grain under shelter and thus prevent its molding. Careful selection of seed is also enjoined. The cause of the disease produced in men and animals, the author thinks due to one or more of the following: *Fusarium roseum*, *Gibberella saubinetii*, *Helminthosporium* sp., *Cladosporium herbarum*. W. T. S.)

(See also Nos. 743, 827, 833, 840, 843, 864, 885, 973, and 984.)

III.—DISEASES OF FRUITS.

737. [Anon.] **Orange-tree diseases.** <Fla. Disp., Farmer and Fruit Grower, n. ser., vol. iii, Jacksonville, July 16, 1891, p. 563.

Reports account of visit of Erwin F. Smith and W. T. Swingle, agents of the U. S. Dept. of Agric., to Florida to investigate the diseases of oranges. (D. G. F.)

738. Argynnis [Sharpe, Alda M.]. **Plums affected by fungus.** <Prairie Farmer, vol. lviii, Chicago, July 4, 1891, p. 422, ½ col., fig. 1.

Figures plum with plum pockets, *Taphrina pruni*, giving short popular account of the disease. (D. G. F.)

739. Bailey, A. **New disease of the orange.** <Fla. Agric., vol. xviii, De Land, Nov. 11, 1891, p. 603, ⅔ col.

Describes disease on sweet orange similar to "scab." Appeared first on lemon and spread to oranges. Sulphur solution, 10 or 12 gallons to 40 gallons of water, partially checked the disease. (J. F. J.)

740. Brunk, T. L. **Plum knots.** <Am. Farmer, 10th ser., vol. x, Baltimore, May 1, 1891, p. 102, ⅔ col.

Notes disease to be caused by *Spharea morbosa* [*sic*], and describes method of its propagation. Recommends painting knots with linseed oil in the spring, and then "no spores will be found in the warts and they will crumble and fall away." Red oxide of iron mixed with linseed oil gives perhaps better results than oil alone. Recommends also cutting out badly diseased trees. (J. F. J.)

741. Butz, Geo. C. **Black knot on plums.** <Ann. Rept. Penn. State College for 1890 Harrisburg, 1891, pp. 166–167, pl. 1.

(See No. 251.) (J. F. J.)

742. Cobb, N. A. **Notes on diseases of plants.** <Agric. Gaz. N. S. Wales, vol. ii, Sydney, Jan., 1891, pp. 60-62.

Gives a short popular description of anthracnose or black spot on grapevines, and condition favorable for its development; also three remedies. Gives formulæ for making Bordeaux mixture and eau celeste, speaks of the success of these remedies in Europe and America. Then treats of "pear blight" (*Fusicladium pirinum*). Speaks of the close resemblance of this fungus and that causing apple scab. Recommends ammonia-carbonate of copper to be used for spraying the trees and gives formulæ for making. Under head of strawberry leaf-blight mentions places from which specimens of this disease have been received and gives remedies for prevention. Under "Rust on marsh mallows" quotes from a letter that it is popularly believed this rust is in some way connected with wheat rust. Makes one or two statements to show that this is probably not true. (M. V.)

743. Cobb, N. A. **Notes on diseases of plants.** <Agric. Gaz. N. S. Wales, vol. ii, Sydney, Mar., 1891, pp. 155–157.

Gives popular description of bitter rot of apple (*Glœosporium versicolor*), showing also that the disease can be given to other fruits, such as peach, cherry, mango, etc.; mentions treatment. Notes presence of "pear mite" and *Fusicladium* and their resemblance to each other, giving remedies for both diseases. Linseed plants from India and New Zealand were attacked by *Melampsora lini*, which caused great loss; finally, for peach rust recommends burning leaves, spraying trees in winter with sulphate of iron (1 pound to 8 gallons of water), and application of potash manures. (M. V.)

744. Cobb, N. A. **Notes on diseases of plants.** <Agric. Gaz. N. S. Wales, vol. ii, Sydney, June, 1891, pp. 347–348.

Describes method of entrance of spores of common mold into core of apples, producing what is known as "moldy core." Recommends modified eau celeste as a probable remedy. Also quotes from Gardeners' Chronicle a description, by M. C. Cooke, of a new vine disease (*Glœosporium pestiferum*), received from Brisbane. (M. V.)

745. Cugini, G., e Macchiati, L. **La Bacterosi dei grappoli della vite.** <Staz. Sper. Agr. Italiane, vol. xx, Giugno 1891 (18 Luglio), Asti, pp. 579-582.

Give preliminary report upon a bacterial disease of young grape clusters found in June, 1891, at several localities near Modena. The disease is manifested by a brown coloring and final drying up of the stems and pedicels of the young grapes and a consequent wilting of the immature berries. The organism (3-4 by 1-1¼ μ), cultivated on gelatin, gives honey-yellow colonies with indefinite contours, which rapidly become confluent and liquefy the medium; also grows on potato, giving same colored colonies, but with sinuose margins. Find the bright yellow color to fade out upon extended cultivation in gelatin. No inoculations were reported on, but it is the intention of the authors to work out the life-history of the parasite. Think the malady likely to prove a most serious one. (D. G. F.)

746. Desperssis, J. A. **Anthracnosis or black spot of the grape.** <Agric. Gaz. N. S. Wales, vol. ii, Sydney, July, 1891, pp. 421-424, figs. 2.

Speaks of the microscopic fungus causing the disease. Sums up results of experiments carried on near Bordeaux to test different substances as preventives. Recommends several washes and powders, and speaks of methods of applying. (M. V.)

747. Detmers, Freda. **Apple scab (Fusicladium dendriticum, Fckl.).** <Ohio Agric. Exper. Sta., 2d ser., vol. iv, Bull. No. 9, Columbus, Dec., 1891, pp. 187-192, pl. v-vii.

Gives a list of apples subject to attacks of disease and describes its features. Discusses external characters, effects on host, and microscopical characters. (See Exper. Sta. Rec., vol. iii, April, 1892, p. 620.) (J. F. J.)

748. Galloway, B. T. **A new pear disease.** <Jour. Mycol., vol. vi, Washington, Jan. 6, 1891, pp. 113-114.

Describes a disease observed in Alabama due to *Thelephora pedicellata* Schw. Recommends cutting out diseased wood, washing with copperas or sulphate of iron, and coating wounds with wax or similar substance. This treatment was successful when tried. (J. F. J.)

749. Halsted, B. D. **Bacterial melon blight.** <Miss. Agric. and Mechanical Coll. Exper. Sta., Bull. No. 19, Agric. College, Jan., 1892, pp. 9-11.

Describes disease due to bacterial germs, and mentions successful experiments in transferring disease from cucumbers to squashes, tomatoes, and potatoes. It thus seems to be the same disease in all these plants. (J. F. J.)

750. Halsted, B. D. **Treatment of cranberry scald and cranberry gall fungus.** <Jour. Mycol, vol. vi, Washington, May 14, 1890, pp. 18-19.

A general description of the diseases, with directions for treatment. (See No. 204.) (J. F. J.)

751. Kerr, J. W. **Plum knots.** <Am. Farmer, 10th ser., vol. x, Baltimore, May 1, 1891, p. 102, ½ col.

Recommends cutting out diseased trees and planting varieties not subject to the disease. Advocates discarding Damson plums altogether. (J. F. J.)

752. Martelli, [N.] **[Ceppi di vite affetti dalla cosi detta tubercolosi.]** <Nuovo Gior. Bot. Ital. (Bull. d. Soc.), vol. xxiii, 6 Aprile, 1891, Firenze, p. 550 [350].

Report by the secretary of the Society of a note presented on a doubtful bacterial disease of the vine called tuberculosis, and the exhibition of slide, showing the organism of the tuberculosis of the olive. (D. G. F.)

753. Martelli, N. **Il black-rot sulle viti presso firenze.** <Nuova Gior. Bot. Ital. (Bull. d. Soc.), vol. xxiii, 5 Ottobre, 1891, Firenze, pp. 604-610.

Discusses question of the presence of the black rot in Italy, deciding it to have made its first appearance in 1891, notwithstanding a previous report in 1877 by Arcangeli. Doubt is thrown on its correct identification by the fact that only the form on the leaf has been found. Refers to work of Viala, and especially to experiments of Galloway. (D. G. F.)

754. Morrow, J. D. **Fungi on fruit trees.** <Am. Farmer, 10th ser., vol. x, Baltimore, July 1, 1891, p. 149, 1⅔ cols.

A general statement of what fungi are. Advocates good cultivation and not too much dependence upon fungicides. (J. F. J)

755. Pammel, L. H. **Fungous diseases of sugar beet.** <Iowa Agric. Exper. Sta., Bull. No. 15, Des Moines, [Ames] Nov., 1891, pp. 234-254, pl. i-vii.

Discusses various diseases of sugar beet observed both in Europe and America. These are beet rust, caused by *Uromyces betæ*; white rust of beets, caused by *Cystopus bliti*; spot disease, caused by *Cercospora beticola*; root-rot disease, caused by Nematode worms; violet-root fungus, caused by *Rhizoctonia betæ*, and also by species of bacteria; scab of beets, caused by bacterial germ as shown by Bolley. The life history of these species is given. In summary states that spot disease can be checked by Bordeaux mixture or ammoniacal carbonate of copper. Beet scab and potato scab seem to be the same, and the two crops should not follow one another. They are liable to be carried from a diseased field to one not infected. [Reprint of article repaged, 16 pp.] (J. F. J.)

756. Pierce, N. B. **A disease of almond trees.** <Jour. Mycol., vol. vii, No. 2, Washington, Mar. 10, 1892, pp. 66-77, pl. xi-xiv.

Describes the extent of the disease and the stocks affected. Gives an extended description of the general and special effects of the fungus, and discusses the spread of the disease. Gives general directions for prevention, mainly the collection and burning of fallen foliage and turning in the soil beneath the trees. Many details of germination and life history of the fungus are also given. The disease is due to *Cercospora circumscissa* Sacc. (J. F. J.) (See Pacific Rural Press, vol. xliv, Aug. 20, 1892, p. 141, fig. 9.)

757. Pierce, Newton B. **Tuberculosis of the olive.** <Jour. Mycol., vol. vi, Washington, Apr. 30, 1891, pp. 148-153, pl. xiv, xv.

Refers to the presence of this disease in the Mediterranean region of Europe, and quotes description by Savastano. Probably due to presence of bacteria. Cutting off affected branches seems to be all that is necessary to prevent disease spreading and doing damage. (J. F. J.)

758. Smith, Erwin F. **Field notes, 1890.** <Jour. Mycol., vol. vi, Washington, Jan. 6, 1891, pp. 107-110.

Gives short notes on peach-leaf curl (*Taphrina deformans* Tul.); plum taphrina; plum blight, apple blight (*Bacillus amylovorus* (Burrill) Trev.); pear leaf-blight (*Entomosporium maculatum* Lév.); black rot (*Læstadia bidwellii* (Ell.) V. and R.); vine blight; brown rot of the peach (*Monilia fructigena*); peach yellows and peach rosette. (J. F. J.)

759. Smith, Erwin F. **Field notes, 1891.** <Jour. Mycol., vol. vii, No. 2, Washington, Mar. 10, 1892, pp. 88-95.

Consists of notes on the following diseases: Peach curl, peach mildew, black spot of peaches, frosty mildew of peaches, peach rust, peach rot, peach yellows, clubbed branches of peach, stem and root tumors, peach rosette, pear diseases, and sycamore blight. (J. F. J.)

760. Smith, Erwin F. **Peach blight.** <Jour. Mycol., vol. vii, Washington, Sept. 10, 1891, pp. 36-39, pl. v, vi.

Describes appearance of disease and its manner of working on the tissues of plant. Penetrates the blossoms and then spreads to twigs. Gives results of experiments to secure fruiting specimens of the fungus (*Monilia fructigena*), and describes its effect upon the woody tissues. (J. F. J.)

761. Southworth, E. A. **Ripe rot of grapes and apples.** <Jour. Mycol. vol. vi, Washington, April 30, 1891, pp. 164-173, pl. 1 (xv).

Gives general outline of history of the fungus (*Glœosporium fructigenum* Berkl.) which is the same as that producing bitter rot in apples. The external characters and microscopic characters are fully described. Under "treatment" gives the results of an experiment, showing that spraying with potassium sulphide and ammoniacal copper carbonate produced good results with apples. The same treatments would probably also protect grapes. (J. F. J.)

762. Thümen, Felix. **Die Black Rot Krankheit der Weinreben (Phoma uvicola, Berk. and Curt.), Physalospora bidwellii (Sacc.).** <Allgemeinen Weinzeitung, Wien, 1891, pp. 1-29.

A general account of black rot of the grape, based for the most part on papers by American authors. (B. T. G.)

763. Underwood, L. M. **Diseases of the orange in Florida.** <Jour. Mycol., vol. vii, Washington, Sept. 10, 1891, pp. 27-36.

Gives notes on orange diseases, with mention of causes, distribution, and remedies. The diseases treated are die-back, foot-rot (Mal-di-Goma), blight, scab, leaf-spot, sooty-mold, and leaf-glaze. The last is due to growth of a lichen. (J. F. J.)

(See also, Nos. 704, 706, 716, 727, 765, 789, 832, 833, 838, 850, 854, 871, 897, 910, 976, and 995.)

IV.—DISEASES OF FOREST AND SHADE TREES.

764. [Anon]. **Dr. Mayr on the parasitic fungi of North American forest trees.** <Gard. and Forest, vol. v, N. Y., Jan. 27, 1892, pp. 37-38.

Refers to examination of original specimens of Dr. Mayr, and gives as conclusions that *Rhytisma punctiforme* Mayr is *R. punctatum* Fries. *Microsphæria corni* Mayr is *M. pulchra* Cke. and Pk. *Lophodermium infectans* Mayr and *Hysteriopsis acicola* are considered too imperfect to say more than that they belong to the order of Hysteriaceæ. No good reason exists for the genus *Hysteriopsis* Mayr. Examination of *Puccinidia abietis* Mayr shows that what is called the *uredospore* is not a *Uredo*, but a species of *Tuberculina*, which infects *Uredineæ*. Uncertainty exists as to whether the species is *T. persicina* or a closely allied species. A second parasite attacking the *Tuberculina* is stated to be what Mayr considered the teleutospores of the Æcidium, whose form is too indefinite to determine. (J. F. J.)

765. Bail. **Verschiedene Mittheilung.** <Schrift. Naturf. Gesells. in Danzig, neue folge, 7 Bd. Danzig, 1891, pp. 22-25.

Mentions collection of *Melampsora gœppertiana* on *Vaccinium vitis-idæa* ("Preiselbeer"). Near Ilmenau, Thüringen finds *Selerotinia baccarum* causing a disease of berries of Vaccinium; *Peziza willkommii*, causing canker of the larch; *Lophodermium brachysporum*, causing the falling of pine leaves. A few other species of fungi are commented on. (W. T. S.)

766. FARLOW, W. G. **Diseases of trees likely to follow mechanical injuries.** [Boston, 1891, pp. 15.]

A paper read before the Massachusetts Horticultural Society, March 7, 1891, giving a statement of the structure of wood and the manner of healing of wounds. Refers also to the manner in which fungous germs find entrance into the wood and the bad effects likely to follow. (J. F. J.)

767 [MEEHAN, T.]. **The European plane.** <Meehan's Monthly, vol. II, Germantown, Pa., Jan., 1892, p. 11, ¼ col.

Notes that in Ghent the European plane tree suffers from *Glœosporium nervisequum*, the leaves falling from its effects early in autumn. Sulphate of copper recommended as a specific. (J. F. J.)

768. PASQUALE, F. **Rapporto al chiarissimo sig. Direttore del R. arsenale di artiglieria in Napoli sul legname di Pioppo attaccato da micro-organismi.** <Nuovo Gior. Bot. Ital., (Bull. d. Soc.), vol. XXIII, Firenze, 8 Guinaio, 1891, pp. 184–186.

Gives preliminary note on a disease of poplar timber reported by the Director of the Artillery Arsenal at Naples, caused by a species of *Micrococcus*. Occurs in boards badly stacked, living in the wood vessels and causing yellow discolorations, and a final destruction of the tracheæ. Organism not cultivated. (D. G. F.)

769. VUILLEMIN, PAUL. **Remarques ètiologiques sur la maladie du Peuplier pyramidal.** <Rev. Mycol., XIV, Toulouse, Jan. 1, 1892, pp. 22–27, pl. 1.

Describes a new fungus *Didymosphaeria populina* and discusses the relation to the disease of severe winters, vegetative reproduction, etc. (E. A. S.)

(See also, Nos. 727 and 759.)

V.—DISEASES OF ORNAMENTAL PLANTS.

770. ARTHUR, J. C. **Carnation rust, a new and destructive disease.** <Am. Florist, vol. VI, Chicago and New York, Feb. 18, 1892, pp. 587–589, fig. 4.

Refers to the recent observance of a carnation disease and its wide extent in the United States. Cause stated to be *Uromyces caryophyllinus*. Gives general history of fungus and suggestions for treatment. Bordeaux mixture and ammoniacal solution of copper carbonate, both effectual remedies. (See also, Cult. and Country Gent., vol. LVII, Mar. 10, 1892, p. 188, fig. 1; Garden and Forest, vol. V, Jan. 13, 1892, p. 18.) (J. F. J.)

771. GALLOWAY, B. T. **Disease of geraniums.** <Jour. Mycol., vol. VI, Washington, Jan. 6, 1891, pp. 114–115.

States the disease is probably due to the presence of a *Bacillus*. Disease had been produced in several instances by inoculations directly from diseased plants. (J. F. J.)

772. HALSTED, B. D. **Fungous troubles in the cutting beds.** <Gard. and Forest, vol. V, New York, Feb. 24, 1892, pp. 91–92.

States that diseases of various sorts have appeared on cuttings, particularly of the carnation, rose, clematis, passion flower, and chrysanthemum. In the carnation, due to species of *Colletotrichum;* in the rose, to a species of *Glœosporium;* in the chrysanthemum, to a species of *Septoria* or *Phyllosticta;* in Abutilon, to a species of *Colletotrichum*, probably identical with that on carnation; in nasturtium probably also the same species. (J. F. J.)

773. HUMPHREYS, ALFRED. **The violet disease.** <Am. Florist, vol. VII, Chicago and New York, Jan. 28, 1892, pp. 521–522.

Replies to C. D. Wadsworth that if an insect or a parasite is the cause of violets losing their leaves, is not that a disease? Mentions effects observed by himself on both violets and on celery. Gives method of cultivating the violet. (J. F. J.)

774. [MEEHAN, T.] **Disease in Clematis.** <Meehan's Monthly, vol. I, Germantown, Pa., Nov., 1891, p. 74, ½ col.

Refers to disease as probably of fungous origin, and recommends watering with a solution of copper, made by dropping pieces of blue copperas about the size of an egg in a barrel of water. Draw earth away from plant and form a basin, in which pour the solution to insure its reaching the "collar" of the plant, the point usually attacked by the fungus. (J. F. J.)

775. [MEEHAN, T.] **Rhododendron disease.** <Meehan's Monthly, vol. II, Germantown, Pa., Nov., 1891, p. 72, 1 col.

Refers to yellowing and dropping of leaves of Rhododendron. Thinks it may be due to attacks of *Agaricus melleus*, but more likely to an oversaturated soil. Recommends under draining. (J. F. J.)

776. [MEEHAN, T.] **Violet diseases.** <Meehan's Monthly, vol. II, Germantown, Pa., Jan., 1892, p. 8, ½ col.

Brief note on disease caused by fungi. Spraying with solution of sulphate of copper recommended. (J. F. J.)

777. S. ———. **[The violet disease.]** <Am. Florist, vol. VII, Chicago and New York, Jan. 28, 1892, p. 522, ⅕ col.

States trouble to spread most rapidly in weather with extreme and sudden changes in temperature. Believes careful cultivation will be effectual preventive. Notes similar trouble with chrysanthemums. (J. F. J.)

778. [Sanders, Edgar.] **The carnation rust.** <Prairie Farmer, vol. LXIV, Chicago, Mar. 5, 1892, p. 151, ⅔ col.

Refers to paper by Arthur (see No. 770) and states that disease may be combated with sulphate of iron (⅓ to ½ pound to a gallon of water), by Bordeaux mixture (probably), and also by ammoniacal copper carbonate. (J. F. J.)

779. Southworth, E. A. **Additional observations on anthracnose of the hollyhock.** <Jour. Mycol., vol. VI, Washington, Jan. 6, 1891, pp. 115-116.

States that a fungus similar to that of diseased hollyhocks has been found in Kansas on *Sida spinosa*. Thinks it probable the species should be known as *Colletotrichum malvarum* (Br. and Casp.). Notes also that *C. bromi* Jennings from Texas may be same as *Steirochæte graminicola* (Ces.) Sacc. (J. F. J.)

780. Southworth, E. A. **A new hollyhock disease.** <Jour. Mycol., vol. VI., Washington, Sept. 10, 1890, pp. 45-50, pl. 1, (III.)

Describes damage occasioned by a new disease of Hollyhocks, caused by *Colletotrichum althææ* n. sp. Gives external and botanical characters and recommends Bordeaux mixture as a remedy. (J. F. J.)

(See also Nos. 843 and 971.)

D.—REMEDIES, PREVENTIVES, APPLIANCES, ETC.

781. Alwood, William B. **Current notes.** <Southern Planter, 51st year, Richmond, Va., June, 1890, pp. 274-276.

Notes treatment of apple scab and black rot of grapes in Albemarle County, Va., and refers to fact that he prepared a bill against peach yellows which was passed with serious amendment by the legislature. (D. G. F.)

782. Alwood, William B. **Notes on treatment of grapes.** <Southern Planter, 52d year, Richmond, Va., May, 1891, p. 249, 1½ col.

Gives instructions for treatment of grape diseases by use of ordinary copper compounds. (D. G. F.)

783. Alwood, William B. **Standard fittings for spray machinery.** <Insect Life, vol. IV, Washington, Oct., 1891, pp. 58-59.

Brief report of committee appointed to confer with makers of spraying machines to secure standard sizes of styles and fittings for machines. (J. F. J.)

784. Alwood, William B. **Treatment of black rot of grapes. Note on Bordeaux mixture—A modification of the copper carbonate preparation.** <Southern Planter, 51st year, Richmond, Va., Oct., 1890, p. 462, 2 cols.

Claims to have discovered that it required only 1¼ parts of quicklime to neutralize 1 part of copper sulphate and discovered independently of several French investigators that the formula might be reduced. Gives the reduced formula as 2 pounds of copper sulphate and 2½ pounds of lime. Claims priority in the preparation of the well known "Masson" mixture of copper carbonate from copper sulphate and sodium carbonate. Gives as date of discovery, spring of 1888. [See Patrigeon, G. Prog. Ag. et Vit. 4 anné 3 Juillet, 1887, p. 17.] (D. G. F.)

785. [Anon.] **Apple scab.** <Am. Agric., vol. LI, New York, Feb., 1892, p. 139, ¼ col.

Notes that "black mildew" of a correspondent is probably apple scab (*Fusicladium dendriticum*). Gives statement of how to treat disease, using solution of 4 pounds sulphate of iron to 4 gallons of water. (J. F. J.)

786. [Anon.] **Bordeaux mixture for potato diseases.** <Agric. Journ. Dept. of Agric. of Cape Colony, vol. IV, Cape Town, Jan. 14, 1892, p. 160, ¼ col.

A paragraph credited to the *Standard* states that "unless the sulphate of copper is neutralized by the admixture of a sufficient quantity of good and fresh quicklime, it is injurious to vegetation." The mixture should show no acidity when tested by means of litmus paper. Equal proportions of lime and copper sulphate are recommended instead of one part of lime to two of copper sulphate as formerly advised. (W. T. S.)

787. [Anon.] **Machines and processes for destroying insect and fungus pests.** <Agri. Gaz. N. S. Wales, vol. II, Sydney, Feb., 1891, pp. 79–81.

A classification of machines and award of certificate of merit to manufacturer of the best machine. (M. V.)

788. [Anon.] **Mildew in grapes.** <Am. Agric., vol. L, New York, May, 1891, pp. 298-299, ¼ col.

Refers to powdery and downy mildew, recommending for the former sulphuring and for the latter ammoniacal solution of copper carbonate. Gives formula for the same. (J. F. J.)

789. [Anon.] **Pear leaf-blight.** <Orange Judd Farmer, vol. xi, Chicago, Jan. 21, 1892, p. 5, fig. 2.

Quotes from report of Secretary of Agriculture in relation to value of ammoniacal copper carbonate solution for pear leaf-blight. Preferable to Bordeaux mixture because about as effectual and cheaper. Costs 3¾ cents per tree for Bordeaux, against 2¼ cents per tree for copper carbonate solution. (J. F. J.)

790. [Anon.] **Poisons on fruit.** <Cult. and Country Gent., vol. lvii, Feb. 18, 1892, Albany, N. Y., p. 128, ⅜ col.

Discusses the use of fungicides containing copper and the liability of danger from use of fruit sprayed with them, concluding that there is really more copper in many articles commonly eaten than is found in sprayed grapes. (J. F. J.)

791. [Anon.] **Preventive for plum-rot.** <Am. Gardening, vol. xiii, New York, Mar., 1892, pp. 180-181, ⅙ col.

Directions for treating *Monilia fructigena.* Burn leaves, etc., in autumn; spray before buds open in spring with iron sulphate, and after flowers open spray with sulphide of potassium. (J. F. J.)

792. [Anon.] **Remedy for flea-beetle and blight [on potatoes].** <Am. Gardening, vol. xiii, New York, Mar., 1892, p. 180, ⅙ col.

States that Bordeaux mixture will prevent blight of potato, as may also ammoniacal solution of copper-carbonate. Doubt expressed as to whether it will pay to treat vines. (J. F. J.)

793. [Anon.] **Rot among late potatoes.** <Am. Farmer, 10th ser., vol. x, Baltimore, Aug. 1, 1891, pp. 170-171, ⅜ col.

Recommends early planting and harvesting for prevention of rot. Bordeaux mixture and other copper compounds, together with London purple, will prevent the disease and kill insect pests at the same time. Article quoted from American Cultivator. (J. F. J.)

794. [Anon.] **Scabby pears.** <Cult. and Country Gent., vol. lvii, Albany, N. Y., Jan. 21, 1892, p. 47, ⅓ col.

Query as to cure for scabby pears answered by saying that fertilizing and manuring will not be effective. Spraying with copper solution has been tried, but without positive results. (J. F. J.)

795. [Anon.] **Sulphate of copper and lime for vine mildew.** <Agric. Gaz. N. S. Wales, vol. ii, Sydney, Sept., 1891, p. 557.

Mentions the report of the British consul at Bordeaux, in which a reference is made to this subject. Says that numerous scientific analyses were made showing that the amount of copper in wine made from sprayed vines was so small that human health could not be injured by it. Another investigation was made a few months ago and confirmed this result. (M. V.)

796. [Anon.] **Sulphate of copper and the potato disease.** <Gard. Chron., 3d ser., vol. xi, Jan. 9, 1892, London, p. 50, ¼ col.

States that experiments concluded last year by the Agricultural Society are described in detail in their journal. The remedy has not prevented the disease, but has lessened its amount. Advises early planting. (M. B. W.)

797. [Anon.] **The Strawsonizer.** <Agric. Gaz. N. S. Wales, vol. ii, Sidney, Mar., 1891, p. 160.

Description of a machine designed for spraying with liquids or powders, sowing seed, and distributing manure. Gives account of trial made with it. (M. V.)

798. [Anon.] **The Strawsonizer.** <Agric. Gaz. N. S. Wales, vol. ii, Apr., 1891, p. 224.

Notes tediousness of distributing sulphur on vines affected with *Oidium* by means of bellows, and says Strawsonizer sulphurs evenly and quickly, implying its value for sulphuring vines. (M. V.)

799. Barry, W. C. **[Presidential address to the western New York Horticultural society.]** <Union and Advertiser, Rochester, N. Y., Jan. 27, 1892.

Under the head of "Insecticides and fungicides" refers to successful use of Bordeaux mixture in combating plant diseases. Carbonate of copper considered a remedy for apple scab (*Fusicladium dendriticum*). Reference is also made to presence of sulphate of copper and blue vitriol on grapes and the little danger from use of sprayed grapes. (J. F. J.)

800. Beach, S. A. **Copper soils and vegetation.** <Cult. and Country Gent., vol. lvii, Albany, N. Y., Jan. 28, 1892, p. 68, 1 col.

Gives results of preliminary greenhouse experiments with peas and tomato seeds grown in soil containing 1 to 5 per cent of copper sulphate. Finds germination accelerated by presence of sulphate but maturity also hastened and plantlets dwarfed. Reports analyses from soil of old potato field showing presence of copper in distinct quantities. Concludes that nearly eleven hundred years would be required to impregnate to the extent of 1 per cent a layer of soil 1 foot deep by ordinary methods of spraying usually employed. (D. G. F.)

801. BERLESE, A. N., ed SOSTEGNI, L. **Osservazioni sull'idea di preservare la vite dal l'invasione della Peronospora mediante la cura interna preventiva con solfato di rame.** <Staz. Sper. Agr. Italiene, vol. XXI, Asti, Settem., 1891 (18 Ottobre, 1891), pp. 229-233.

Discuss results of two experiments with small quantities of soil treated with copper sulphate showing the sulphate to be decomposed in the soil and absorbed by it. Decide absorption power of calcareous soil to equal 46,822 Kg. of copper sulphate per hectare. Suggest that plants may absorb the copper in small quantities and inquire if this may not be turned to account in the treatment of diseases. (D. G. F.)

802. BUNZLI, J. H. **Combating the potato blight.** <Jour. Mycol., vol. VI, Washington, Sept. 10, 1890, pp. 78-79.

Gives experiments made with different fungicides. Concludes the best results were obtained from the use of Bordeaux mixture and copper-soda solution, the latter made with 4 pounds 6 ounces copper sulphate, 6 pounds 10 ounces soda, and 26 gallons of water. Plants should be sprayed twice. (J. F. J.)

803. BUTZ, GEO. C. **Implements and materials tested [in 1890].** <Penn. Agric. Ex. Sta., Bull. No. 14, State College, Jan., 1891, pp. 12-13.

Describes the "Victor" spraying pump, manufactured by the Field Force Pump Company, Lockport, N. Y. (J. F. J.)

804. CHARLES, M. P. **Les tomates sulfatées.** <Jour. Phar. et Chimie, 5^e ser., t. XXIV, Paris, 1891, p. 145.

Gives an account of a scare in France over the treatment of tomatoes by Bordeaux mixture. Shows that the amount is too small to be injurious and is found principally in the seeds of the fruit. Refers to the fact that bread, coffee, tea, and especially cocoa contain large amounts of copper, as does also liver of beef. Refers to action of prefect of police. (D. G. F.) (Reviewed in Staz. Sper. Agrarie Italiene, vol. XXI, fac. III, 1891, p. 291.)

805. CHESTER, F. D. **The copper salts as fungicides.** <Jour. Mycol., vol. VI, Washington, May 14, 1890, pp. 21-24.

A statement of the constituents of Bordeaux mixture, eau celeste, eau celeste modified, and ammoniacal copper carbonate, with the chemical reactions of each. (J. F. J.)

806. COBB, N. A. **Notes on diseases of plants.** <Agric. Gaz. N. S. Wales, vol. II, Sydney, Aug., 1891, p. 492.

Speaking of apple scab (*Fusicladium dendriticum*) recommends eau celeste (modified) as a remedy. Recommends Bordeaux mixture as a preventive of strawberry leaf blight (*Sphærella fragariæ*). Under the subhead "Experiments with the Strawsonizer for prevention of wheat rust" gives suggestions as to method of using in experiment. (M. V.)

807. COSTE, H. **Instruction pratique sur les traitements à effectuer contre le mildew et l'anthracnose.** <Ann. Soc. d'hórt. et d'hist. nat. de l'Hérault. 2 sér., tome XXIII, Montpellier, May and June, 1891, pp. 178-182.

The departmental professor of agriculture is sponsor for the following statements which occur in a work designed for general distribution. For grape mildew (*Peronospora*) the Bordeaux mixture has been found to give the most satisfactory results, but eau celeste, containing a part of the hydrated oxide of copper in an immediately soluble form, is a very active remedy, useful when vines are already attacked. Directions are given for making and applying Bordeaux mixture and eau celeste. If liquid fungicides are preferable, ordinarily, to powders, the latter may be of great service when the berries begin to be attacked. The two treatments may be combined, the Bordeaux or eau celeste being followed the day after by Skawinski, cupro-steatite, sulfo steatite, or sulphated sulphur—the first two on vines still free, the latter on vines already attacked. They should be applied mornings when dew is on, or quiet evenings. Anthracnose attacks principally the berries of Alicante Bouchet and Carignane. The Aramon, a variety which has heretofore remained almost exempt, is now one of the most attacked by punctate anthracnose. No radical remedy is known. Four have been used—sulphur, lime, cement, and gypsum. Employed separately they have some value, but are more efficacious when mixed in the following ways: (1) ⅓ sulphur and ⅔ lime of *Teil*. (2) ⅓ sulphur and ⅔ cement; (3) ⅓ sulphur and ⅓ lime of *Teil*, ⅓ cement; (4) ⅓ sulphur and ⅓ lime of *Teil*, ⅓ baked plaster. These mixtures should be used copiously in still evenings or mornings when there is dew. The following wash is recommended for use in the spring on vines already attacked: Dissolve 50 per cent sulphate of iron in warm water, after having wet the crystals with 1 per cent of sulphuric acid. The substance should be put on some days before vegetation begins with a brush or with a spraying machine. (E. F. S.)

808. CROZIER, A. A. **On the effects of certain fungicides upon the vitality of seeds.** <Jour. Mycol., vol. VI, Washington, Mar., 1890, pp. 8-11.

Gives results of experiments with blue vitriol on corn (a teaspoonful in half a saucer of water; also 5 pounds vitriol to 10 gallons of water); in both cases germination was retarded. Blue vitriol on wheat (5 pounds to 10 gallons of water) also had bad effect on germination. Copperas on corn was tried with a like injurious effect. The seed in these trials was soaked from ten minutes to twenty-four hours. (J. F. J.)

809. DIMMOCK, GEO. **Electricity in agriculture.** <Science, vol. 19, New York, Feb. 19, 1892, p. 109, ½ col.

Refers to paper by C. Warner (see No. 867) and queries whether the copper in the electric wires rather than the electric current was the cause of the freedom from mildew. (J. F. J.)

810. DURAND ET GALEN. **Traitement du Mildiou par le verdet Gris.** <Montpellier, Ricard Fréres, 1892, pp. 12.

Present arguments in favor of the use of verdet or acetate of copper over Bordeaux mixture in the treatment of *Peronospora viticola*. (D. G. F.)

811. [EDITORIAL.] **"Poisoned" apples.** <Cult. and Count. Gent., vol. LVII, Albany, Feb. 18, 1892, p. 130, ⅔ col.

Refers to fear in England of eating apples sprayed with copper preparations, and points out absurdity of belief in any danger from this source. (J. F. J.)

812. [EDITORIAL.] **[Sulphate of copper for potatoes.]** <Science Gossip, No. 317, London, May, 1891, p. 112, ⅓ col.

Notes sulphate of copper as an antidote for potato disease as well as inducing a heavier crop. (J. F. J.)

813. [FAIRCHILD, D. G.] **Sprayed fruit harmless.** <Democrat and Chronicle, Rochester, N. Y., Feb. 1, 1892.

An article prepared by a committee of the Western New York Horticultural Society, consisting mainly of an abstract of a paper by D. G. Fairchild. Reference is made to the presence of copper in many articles of common use as well as in sprayed grapes. Analyses show the maximum amount of copper to be ⅕ of a grain per pound of fruit. A summary of analyses made by Van Slyke is given, and the conclusion positively announced that it is impossible for a person to get enough copper from the fruit to be injurious to health. (J. F. J.)

814. FAIRCHILD, D. G. **The toxicology of the copper compounds when applied as fungicides.** <Union and Advertiser, Rochester, N. Y., Jan. 28, 1892.

Abstract of paper read before Western New York Horticultural Society, advocating use of Bordeaux mixture and ammoniacal solution of copper carbonate, and suggesting a reduction in amount of copper used in Bordeaux mixture, using 65 to 75 gallons of water [instead of 45] to 6 pounds of copper sulphate and 4 pounds of lime. (See Gard. and Forest, vol. v, Feb. 10, 1892, p. 71.) (J. F. J.)

815. GALLOWAY, B. T. **Cans't thou minister to a plant diseased?** <Rural New Yorker, vol. L, New York, Dec. 19, 1891, pp. 880-881.

Refers to early belief as to the origin of blights or mildews, and to the later investigations as to their causes. These were carried on especially by the Section of Vegetable Pathology established in 1885, and as a result the scientific farmer is able to conquer diseases which previously had wrought great havoc among his crops. (J. F. J.)

816. GALLOWAY, B. T. **Description of a new knapsack sprayer.** <Jour. Mycol., vol. VI, Washington, Sept. 10, 1890, pp. 51-59, figs. 10.

A detailed description of a new and low-priced knapsack sprayer, estimated to cost $10.87. Manufactured by Albinson & Co., Washington, D. C. (J. F. J.)

817. GALLOWAY, B. T. **Does it pay to spray?** <Am. Farmer, 10th ser., vol. X, Baltimore, Oct. 15, 1891, p. 232, 1½ cols.

Gives result of use of fungicides, especially Bordeaux mixture, for black rot, also for pear leaf-blight and scab. (J. F. J.)

818. GALLOWAY, B. T. **Notes on fungicides and a new spraying pump.** <Jour. Mycol., vol. VI, Washington, May 14, 1890, pp. 25-26.

Gives a formula for preparation of copper acetate or verdigris; also one for a fungicide for downy mildew of grape. Announces that a new and cheap knapsack spraying pump will be put on the market in a few weeks. (J. F. J.)

819. GALLOWAY, B. T. **Suggestions in regard to the treatment of Cercospora circumscissa.** <Jour. Mycol., vol. VII, No. 2, Washington, Mar. 10, 1892, pp. 77-78.

Gives methods of treatment based on experiments made on similar diseases in Australia. Recommends ammoniacal solution of copper carbonate in proportions of 5 ounces copper carbonate, 3 pints aqua-ammonia, and 45 gallons of water. Details given as to method of applying fungicide and a recipe for making copper carbonate at home at expense of about 18 cents per pound. (J. F. J.)

820. GALLOWAY, B. T. **Treatment of black rot, brown rot, downy mildew, powdery mildew, and anthracnose of the grape; pear scab and leaf-blight, and apple powdery mildew.** <Jour. Mycol., vol. VI, Washington, Mar., 1890, pp. 11-15.

Gives statement of mode of treatment of diseases mentioned in title, with formulæ for various fungicides. (J. F. J.)

821. GALLOWAY, B. T. **Experiments in the treatment of plant diseases. Part III.** <Jour. Mycol., vol. VII, Washington, Sept. 10, 1891, pp. 12-16, fig. 1.

Gives details of experiments on grape diseases to determine the comparative value of various fungicides; the value of mixed treatment and value of early as compared with late sprayings. The conclusions were that Bordeaux mixture heads the list as a preventive against black rot; copper carbonate in suspension and milk of lime are comparatively useless; copper acetate is liable to injure the foliage, as is also mixture No. 5. Early sprayings are absolutely necessary to insure the best results. (J. F. J.) (For Parts I and II see Nos. 824 and 825.)

822. GALLOWAY, B. T. **Note [on paper by Newcombe on "Perennial mycelium of the fungus of blackberry rust"].** <Jour. Mycol., vol. VI, Washington. Jan. 6, 1891, pp. 106-107.

Refers to value of treatment with fungicides for prevention of rust. Concludes it is only indirectly beneficial and advocates grubbing up diseased plants. (J. F. J.) (See No. 976).

823. GALLOWAY, B. T. **The improved Japy knapsack sprayer.** <Jour. Mycol., vol. VII, Washington, Sept. 10, 1891, pp. 39-41, pl. VII-IX.

Describes in detail an improved sprayer, estimating it to cost from $10 to $12. (J. F. J.)

824. GALLOWAY, B. T., and FAIRCHILD, D. G. **Experiments in the treatment of plant diseases. Part I.** <Jour. Mycol., vol. VI, Washington, Jan. 6, 1891, pp.89-99.

Describe treatment of black rot of grapes giving details of experiments made at Vienna, Va., to determine: (1) Best means of applying preparations; (2) relative value of Bordeaux mixture, ammoniacal copper carbonate solution, copper carbonate in suspension, and a mixed treatment of the first two; (3) actual cost of each treatment; (4) amount of copper found on fruit. The amount of fruit saved by the various treatments varied from 93.64 per cent to 99.20 per cent. The expense varied from .0077 cent to .008 cent per pound of fruit. The conclusion reached was that of the three treatments that with ammoniacal solution was the most profitable. Give also report on diseases of the grape in western New York, the special object being to investigate "blight" or "rust." Give characters of disease with causes and suggestions for treatment. Underdraining and late pruning are suggested. Brief reference to other diseases. (J. F. J.)

825. GALLOWAY, B. T., and FAIRCHILD, D. G. **Experiments in the treatment of plant diseases. Part II.** <Jour. Mycol., vol. VI, Washington, April 30, 1891, pp. 137-142.

Give details of experiments on pear leaf-blight and scab with five different fungicides, viz: Bordeaux mixture, ammoniacal solution, copper acetate, mixture No. 5, and copper carbonate in suspension. The first two gave the best results, the Bordeaux mixture being considered the better. For pear scab the experiments indicate that the sprayings should be made very early and that Bordeaux mixture is most to be relied on. (J. F. J.)

826. GARDNER, H. **Viticulture. Statistics of grape growing and wine production in the United States.** <Census Bulletin, No. 38, Washington, Mar. 10, 1891, pp. 11.

Gives general statistics of grape culture in the United States and mentions successful use of the fungicides recommended by the Department of Agriculture for combating grape diseases. (J. F. J.)

827. GIRARD, AIMÉ. **Recherches sur l'adhérence aux feuilles des plantes et notament de la pomme de terre des composés cuivriques destinés a combattre leurs maladies.** <Journ. d'Agric. Prat., 56 Année, t. I, Paris, Feb. 4, 1892, pp. 176-178.

Tests numerous compounds of copper as to their adhesive power when applied to the foliage of the potato as shown by analyses of treated leaves before and after submittal to artificial showers of rain. Concludes that Bordeaux mixture (2 kg. cop. sulphate and 1 kg. lime) adheres better than the same mixture with double amount of lime; that the copper soda mixture and copper acetate possess adhesive power double that of Bordeaux, and the Perret mixture (copper sulphate, lime, and molasses) showed remarkable adhesive properties, while Bordeaux mixed with clay (aluminium compounds) did not adhere so well as the standard Bordeaux. (D. G. F.) (See also Comp. Rend., Paris, Feb. 1, 1892, pp. 234-236; Exper. Sta. Record, vol. III, May, 1892, p. 734.)

828. GOFF, E. S. **Treatment of apple scab.** <Jour. Mycol., vol. VI, Washington, May 14, 1890, pp. 19-21.

Recommends solution of copper carbonate in ammonia and gives directions for preparing and using the fungicide. Also describes apparatus for spraying. (J. F. J.)

829. GOFF, E. S. **Treatment of fungous diseases.** <Jour. Mycol., vol. VII, Washington, Sept. 10, 1891, pp. 17-25, fig. 2.

Gives details of experiments for the prevention of apple scab, using copper carbonate dissolved in ammonia and in suspension in water; sulphur powder, and mixture No. 5 (ammoniated copper sulphate and ammonium carbonate). The results were mostly negative, but mixture No. 5 was most efficient. Details of treatment of *Septoria* of raspberry and blackberry are given, and show that the foliage of the raspberry is too delicate to stand applications of a corrosive nature. Foliage of blackberry is more resistant than raspberry and less so than that of apple. Ammoniacal copper carbonate solution can be used on blackberry but not on raspberry. The use of Bordeaux mixture for potato rot was successful. (J. F. J.)

830. GREEN, W. J. **The spraying of orchards.** <Ohio. Agric. Exper. Station, 2d Ser., vol. 4, Bull. No. 9, Columbus, Dec., 1891, pp. 193-219, pl. VIII-XIII, 1 diagram.

Gives an account of experiment to prevent apple scab undertaken to ascertain (1) compounds to be used; (2) time to make application; (3) compound best adapted to be used with insecticides, and (4) profit in spraying. Five fungicides were used, viz, ammoniacal copper carbonate, modified eau celeste, dilute Bordeaux mixture, precipitated carbonate of copper, and ammonia copper solution. Of these dilute Bordeaux mixture gave the best results. Gives details of relative efficacy of fungicides, cost of spraying, effect of scab on the fruit, value of spraying to prevent scab, size of apples as effected by spraying, market value of apples, time and machinery for spraying. Found Paris green and dilute Bordeaux mixture together acted as both fungicide and insecticide. Discusses also spraying to prevent pear scab, dilute Bordeaux mixture and modified eau celeste being about equally beneficial, but the latter injured the foliage. For "shot-hole" fungus of the plum (*Septoria cerasina*) dilute Bordeaux mixture was found beneficial. Gives directions for making fungicides and a short list of manufacturers and dealers in spraying machinery. Gives a summary of the bulletin on last page. (See Exper. Sta. Record, vol. III, April, 1892, p. 620.) (J. F. J.)

831. Greiner, T. **(1) Comments on current agricultural literature. (2) The New York grape scare.** <Farm and Fireside, vol. xv, Springfield, Ohio, Dec. 15, 1891, p. 2.

(1) Thinks that Bordeaux mixture will soon "play out." It has various objections: (*a*) it is expensive; (*b*) it is troublesome to prepare and apply; (*c*) it has to be strained; (*d*) it is apt to clog the nozzle. Recommends the ammoniacal solution for all diseases. Advises fruit growers to study these questions so as to be prepared to spray in the proper way next year. (2) Says that grape growers were as much to blame as the New York Board of Health. The grapes should not have been sprayed so late, and if sprayed late the ammoniacal solution should have been used. (B. T. G.)

832. Halsted, B. D. **Experiments for the year upon cranberry diseases.** <11th Ann. Rept. N. J. Agric. Ex. Sta., New Brunswick, 1891, pp. 332–339.

(1) Gives results of winter treatment of cranberry bog attacked by gall fungus (*Synchytrium vaccinii* Th.), showing good effects from keeping the bog dry. Gives copy of New Jersey State law for the eradication of dangerous plant diseases passed with special reference to the affected bog. (2) Gives results of several experiments with fungicides in the treatment of cranberry scald, using sulphur, sulphate of copper, sulphate of iron, air-slaked lime, common salt, carbonate of lime, modified eau celeste, sodium hyposulphate, sulphate of potash, ammoniacal solution of copper carbonate and Bordeaux mixture. Finds that heavy applications—1½ to 10 pounds of copper sulphate per square rod of bog, 3 to 20 pounds of iron sulphate, 3 to 20 pounds of sulphur—not only did not prevent disease but actually killed the vines, while mixed applications of sulphur and lime, sulphur and sulphate of copper, lime and sulphate of copper, and carbonate of lime, did not injure the vines in proportion of 2 to 10 pounds of each salt per 4 square rods of bog, but checked the scald only partially. Reports negative results from a test of ten substances named above in the proportion of 10–5–3½–1½ pounds per 25 square feet of bog. Reports a successful use by Mr. Goldsmith of layer of loam or sand applied to bog. (D. G. F.)

833. Halsted, B. D. **Fungous diseases and their remedies.** <Amer. Agric., vol. LI, New York, Jan., 1892, pp. 34–35.

Briefly describes methods used for prevention of fungous diseases by spraying, soaking seed, etc. Gives credit to Department of Agriculture for work accomplished. (J. F. J.)

834. Halsted, B. D. **[Remarks on spraying.]** <Ann. Rept. N. J. State Board of Agric., vol. xviii, Trenton, 1891, pp. 100–102.

Advocates spraying for prevention of plant diseases. (J. F. J.)

835. Halsted, B. D. **Treatment of grapevines.** <Cult. and Country Gent., vol. lvi, Albany, N. Y., July 16, 1891, p. 576.

Review of Farmers' Bulletin No. 4, of U. S. Department of Agriculture, giving directions for treatment of grape vines for prevention of downy and powdery mildew, anthracnose and black rot. (D. G. F.)

836. Harvey, F. L. **Spraying experiments—apple scab.** <Ann. Rept. Maine Agric. Ex. Sta., part IV, Orono, Dec. 31, 1890, (1891), p. 113.

Mentions failure to carry out expected experiment with apple scab. (D. G. F.)

837. Hatch, A. S. **[Notes on apple scab and potato rot.]** <Jour. Mycol., vol. vii, Washington, Sept. 10, 1891, pp. 26–27.

Gives additional notes on the experiments conducted by Prof. Goff, mentioning effects of spraying on the foliage of apple, raspberry, and blackberry. Describes also manner of treating potatoes with Bordeaux mixture for blight. This was also effective against Colorado potato beetle. (J. F. J.)

838. Howard, Chas. H. **Spraying fruit.** <Farm, Field, and Stockman, vol. xv, Chicago, Feb. 6, 1892, p. 127.

Notices a review of paper read before Illinois State Horticultural Society for 1892. Partially successful use of copper sulphate and soda in prevention of rot of grapes. (D. G. F.)

839. Kellerman, W. A., and Swingle, W. T. **Prevention of smut in oats and other cereals.** <Jour. Mycol., vol. vi, Washington, May 14, 1890, pp. 26–29.

Gives outline of treatment to be used. This is by means of hot water. (See for further details Nos. 156, 157, 291.) (J. F. J.)

840. Kinney, L. F. **The potato scab.** <Rhode Island State Agric. Exper. Sta., Bull. 14, Kingston, Oct., 1891, pp. 175–187, figs. 3.

Gives an account of the characters and cause of the disease from Bolley and Thaxter, and details of experiments for its prevention. Seaweed used to cover the seed potatoes checked the disease, while stable manure scattered in the furrows or over the seed was favorable to its development. Spraying the seed in the furrows with Bordeaux mixture before covering with earth gave a product almost free from scab, and was more effectual than the sprayings of the vines with the same fungicide. Spraying with Bordeaux mixture also gave good results in the prevention of potato blight and rot. (See Exper. Sta. Record, vol. III, Apr., 1892, p. 623; Gard. Chron., London, June 11, 1892, p. 758.) (J. F. J.)

841. M[ARLATT], C. L. **A cheap spraying apparatus.** <Insect Life, vol. III, Washington, Aug., 1890, pp. 38–39, fig. 1.

Describes and figures an apparatus designed by R. Thaxter for using fungicides and insecticides. (J. F. J.)

842. MASSEY, W. F. **The Bordeaux mixture.** <Am. Farmer, 10th ser., vol. X, Baltimore, June 15, 1891, p. 137, ½ col.

Mentions use of Bordeaux mixture as a fungicide. (J. F. J.)

843. MAYNARD, S. T. **Treatment of mildews upon plants under glass.** <Jour. Mycol., vol. VI, Washington, Mar., 1890, pp. 16–18.

Gives summary of results of experiments on rose and lettuce mildew. For both recommends evaporated sulphur under proper conditions. (J. F. J.)

844. McCLURE, C. W. **Fungicides.** <Trans. Ill. State Hort. Soc., new ser., vol. XXV, Warsaw, Dec. 8–10, 1891, pp. 239–243.

Gives popular instructions for preparation and application of common fungicides. (D. G. F.)

845. MEEHAN, JOS. **Bordeaux mixture for pear blight.** <Cult. and Country Gent., vol. LVII, Albany, N. Y., Jan. 14, 1892, p. 28, ⅛ col.

Gives successful result from use of Bordeaux mixture for leaf-blight. Gives formula as 1 pound sulphate of copper, 1 pint ammonia to 22 gallons of water. This also used with success for black spot of roses. (J. F. J.)

846. [MEEHAN, T.] **Blackberry rust.** <Meehan's Monthly, vol. I, Germantown, Pa., Aug., 1891, p. 27, ⅕ col.

Notes presence of red rust on blackberry and raspberry leaves during summer at East Stroudsburg, Pa. Cutting out and burning recommended. (J. F. J.)

847. [MEEHAN, T.] **Bordeaux mixture.** <Meehan's Monthly, vol. II, Germantown, Pa., Jan., 1892, p. 10, ⅕ col.

Does not consider lime necessary in preparing Bordeaux mixture. (J. F. J.)

848. [MEEHAN, T.] **Sulphate of iron.** <Meehan's Monthly, vol. I, Germantown, Pa., Nov., 1891, p. 74, ⅕ col.

Refers to use of copper as a fungicide, stating that both sulphate of iron (green copperas) and sulphate of copper (blue copperas) are useful to destroy fungi. (J. F. J.)

849. MENOZZI, A. **Appunti alla comunicazione preventiva dei Proff. A. N. Berlese ed L. Sostegni "Osservazioni sull' idea di preservare la vite dall'invasione della Peronospora mediante la cura interna preventiva con sulfato di rame."** <Staz. Sperim. Agr. Italiene, vol. XXI, Nov., 1891 (Dec. 20, 1891), Asti, pp. 466–467.

Discusses article by Berlese and Sostegni in September number (see No. 801) expressing the opinion that the reaction taking place in the soil upon the addition to it of copper sulphate is not similar to that which takes place in case of the Bordeaux mixture, but more probably that the copper sulphate behaves like sulphate of potassium or sulphate of ammonium. Refers to work of Gorup Besanez (Ann. der Chem. u. Pharm., Bd. 127, p. 251) and Nobbe (Land. Vers. Stat., Bd. 15, p. 273), not mentioned by Berlese & Sostegni. (D. G. F.)

850. MILLARDET ET GAYON. **Nouvelles Observations sur l'efficacité de diverses bouillies dans le traitement du mildiou.—Sulfostéatite.**—<Journ. d'Agric. Prat., 56 année t. I. Paris, Feb. 18, 1892, pp. 231–239.

Gives results of experiments in treatment of *Peronospora viticola* in various localities in France testing the following fungicides: (1) Bouillie bordelaise céleste [principally sulphosaccharate of copper]; (2) Bouillie céleste à poudre unique [Sulphosaccharate of copper mixed with sulphate of copper and carbonate and bicarbonate of soda 2 kg. per hectolitre of water]; (3) Bouillie au sulphate d'ammonique [Bordeaux mixture; 1 kg. copper sulphate + 500 gr. lime + 400 gr. ammonium sulphate + 1 hectolitre of water]; (4) Bouillie bordelaise au sporivore Lavergne [Bordeaux mixture with addition of sporivore 1 kg. 500 gr. copper sulphate, 1 kg. 500 gr. lime, to which is added 1 kg. of sporivore, prepared by M. Lavergne, heated previously in 1 hectolitre of water]; (5) Bouillie bourguignonne [1 kg. 500 gr. copper sulphate, 2 kg. 250 gr. sodium carbonate crystals in 1 hectolitre of water prepared warm]; (6) Bouillie berichonne [same formula with addition of 25 centilitres ammonia 22 per cent]; and (7) ordinary Bordeaux [1 kg. 500 copper sulphate, 500 gr. lime in 1 hectolitre of water.] Although the results of the several experiments varied somewhat the author concludes that the mixtures containing a small amount of copper in solution as Nos. 1, 2, 3, and 6 gave no better results than those containing the copper in insoluble form. Reports from use of No. 3 serious injury to the foliage. Decides that the ordinary Bordeaux mixture using only 1 kilogramme of copper sulphate per 100 litre of water is not strong enough to prevent severe attacks of mildew. Closes with accounts of favorable results obtained with use of sulphosteatite. (D. G. F.)

851. NESSLER, J. **Copper-soda and copper-gypsum as remedies for grape mildew.** <Jour. Mycol., vol. VI, Washington, Sept. 10, 1890, pp. 73–74.

Describes methods of preparing the solutions and recommends spraying rather than using a dry powder. (J. F. J.)

852. Parmly, J. C. **Copper solutions and soils.** <Cult. and Count. Gent., vol. LVII, Albany, N. Y., Mar. 10, 1892, p. 184, ⅔ col.

Refers to article by S. A. Beach (see No. 800) and advocates use of sawdust or some similar material to catch the poisonous substances used in spraying. (J. F. J.)

853. Penny, C. L. **Several articles of food known to be healthful found to contain small quantities of copper.** <2d Ann. Rept. Del. College Agr. Ex. Sta., Newark, 1889, pp. 172–174.

Establishes presence of copper in grapes that have been treated with Bordeaux mixture and afterward washed with dilute vinegar, as also in grapes receiving no treatment, *i. e.*, natural; gives analyses of molasses, oatmeal, flour, beef liver, and New Orleans syrup. The number of parts of copper per million varies from 0.86 in flour to 58.85 in beef liver. Treated grapes contain from 2.4 to 6.23 parts per million, an amount little exceeding that in baking molasses or oatmeal, and less than one-ninth that found in beef liver. (D. G. F.)

854. Rathay, Emerich. **Bericht über eine im hohen Auftrage Seiner Excellenz des Herrn Ackerbau Ministers in Frankreich unternommene Reise zur Nachforschung über die Rebkrankheit Black Rot.** <Wien, 1891, pp. 20, fig. 7.

Gives a report of a visit made by the French Minister of Agriculture and several scientists to southern France in order to investigate the black rot fungus. The vines near Val Marie were first examined, this being the place where black rot was first discovered in France. Despite the most energetic efforts by the Government extending over a period of five years the disease still exists in this region. The report concludes by saying that black rot occurs sporadically throughout southern France, that no satisfactory remedy for it has been found, and that owing to its affecting green wood, its transportation on half-matured cuttings is made highly probable. (B. T. G.)

855. Riley, C. V. **The outlook for applied entomology.** <Insect Life, vol. III, Washington, Jan., 1891, pp. 181–210.

Although devoted mainly to entomology, mention is made (pp. 192-195) of machines for using fungicides and insecticides, among them the Japy and Galloway sprayer and the Strawsonizer. Reference is also made (pp. 197-198) to contagious diseases of insects, the statement being that the best results so far obtained have been with the *Entomophthora* of the chinch bug. Gives brief mention of method of studying these diseases. (J. F. J.)

856. [Roosevelt, George W.] **[Experiment on potatoes in Belgium.]** <Report of Statistician U. S. Dept. of Agric., new ser., No. 92, Washington, Jan. and Feb. [Feb. 12], 1892, p. 27.

A quotation from a report by Consul Roosevelt mentioning successful use of Bordeaux mixture in combating potato rot. The plat treated yielded 21,500 kilograms to the hectare, while that untreated yielded only 6,900 kilograms to the hectare. (J. F. J.)

857. Rostrup, E. **Destruction des cryptogames nuisibles.** <Rev. Mycol., vol. XIV, Toulouse, Jan. 1, 1892, pp. 29–33.

Divides injurious fungi into two classes—one which can be controlled by the individual farmer independently of his neighbors, and another which requires concerted action to eradicate. In the first class the author includes smuts of grain, *Plasmodiophora brassicæ*, *Rhizoctonia violacea*, *Sclerotinia trifoliorum*, and *Phoma sanguinolenta*. In the second class are *Phytophthora infestans* and the *Uredineæ*. For the latter he recommends legislation which shall have for an end the disinfection of seed, destruction of hosts which produce any form of rust that will infect economic plants, and the hindrance to the introduction of fungous diseases by plants or seeds from countries where diseases exist. (E. A. S.)

858. S[mith], H. W. **Mixtures for grape diseases.** <Am. Gardening, vol. XIII, New York, Feb., 1892, p. 114, ½ col.

Gives formulæ for Bordeaux mixture and ammoniated copper carbonate solution. (J. F. J.)

859. [Smith, H. W.] **Prevention of plum knot.** <Am. Gardening, vol. XIII, New York, Feb., 1892, p. 116. ⅛ col.

Recommends cutting out diseased branches. Spraying with ammoniacal solution may check disease. (J. F. J.)

860. [Smith, H. W.] **Rose mildew.** <Am. Gardening, vol. XIII, New York, Feb., 1892, p. 115, ⅛ col.

Recommends as a preventive ½ ounce hyposulphite of soda to 10 gallons water; ammoniacal solution of copper carbonate also recommended. (J. F. J.)

861. Stahl, John M. **Spraying in western Illinois.** <Cult. and Country Gent., vol. LVI, Albany, Sept. 3, 1891, p. 716, 2 cols.

Gives popular account of successful use of remedies against grape diseases by the Nauvoo Fruit Growers' Association. (D. G. F.)

862. Stahl, Wm. **Black rot and mildew.** <Fla. Disp., Farmer and Fruit Grower, new ser., vol. III, Jacksonville, Jan. 8, 1891, p. 25, 3 cols.

Extract from circular of manufacturers of spraying machinery. (D. G. F.)

863. Stebbins, C. W. **Pear blight.** <Fla. Disp., Farmer and Fruit Grower, new ser., vol. IV, Jacksonville, Mar. 3, 1892, p. 163, ⅛ col.

Says blight was cured by sprinkling tree with copperas and water, a tablespoonful to a bucket of water. Some also put on ground and hoed in. (Quoted from "National Stockman.") (J. F. J.)

864. SWINGLE, W. T. **Treatment of smuts of oats and wheat.** <U. S. Dept. Agric., Div. of Veg. Path., Farm. Bull. No. 5, Washington, Feb., 1892, pp. 8, pl. 1.

Describes the smuts of grain and gives an estimate of amount of damage resulting from the diseases. Gives directions for treatment, consisting mainly of immersing seed in hot water at a temperature of 132° to 135°. This is known as the Jensen treatment. Potassium sulphide for oats and copper sulphate for wheat also noticed. Short bibliography given on p. 8. (See also Agric. Jour. Cape Colony, vol. v, May 5, 1892, pp. 3–5.) (J. F. J.)

865. VAN SLYKE, L. **Results of analyses of some substances used in spraying.** <Cult. and Country Gent., vol. LVII, Albany, N. Y., Feb. 18, 1892, p. 128, 1 col.

States that a can of "Copperdine" contained only 8¾ oz. of copper sulphate, equal to 4 oz. copper carbonate and 28 oz, ammonium carbonate. Cost was about 29 cents. A sample of dry Bordeaux contained 11.62 per cent of copper instead of 15.24 per cent, as it should have done. Gives tests for determining the purity of copper sulphate, copper carbonate, and Paris green. (J. F. J.)

866. VAN SLYKE, L. **The adulteration of copper mixtures.** <Gard. and Forest, vol. v, New York, Feb. 24, 1892, pp. 90–91.

A summary of conclusions given in a paper read before the Western New York Horticultural Society, mentioning tests for determining purity of various fungicides. (J. F. J.)

867. WARNER, CLARENCE D. **Electricity in agriculture.** <Science, vol. XIX, New York, Jan. 15, 1892, pp. 35–37.

Refers to the experiments made to show the influence of electric currents upon the growth of plants. Gives details of experiments made at Hatch Experiment Station, Amherst, Mass., on lettuce to ascertain effects of an electric current on prevention of mildew. The result was that the largest heads were over the greatest number of wires and nearest the electrodes; five out of fifteen died of mildew in treated bed. It was found that the healthiest and largest plants, as soon as the current became feeble or ceased altogether, began to be affected with mildew. In beds without electric currents only three plants out of fifteen had partially developed, and only one was free from disease. In another experiment only five out of twenty plants were unaffected by mildew in the treated bed, while out of twenty plants in an untreated bed all but one died from mildew before half grown, and that one was badly diseased. The conclusion is that "those plants subjected to the greatest electrical influence were hardier, healthier, larger, had a better color, and were much less affected with mildew than the others." Grasses were experimented with, but without marked results. (See also, Bull. No. 16, Mass., Hatch Ex. Sta., Jan., 1892, pp. 8; Scient. Am. Supplement, vol. XXX, Feb. 13, 1892, pp. 13436–13437; Am. Agric., vol. LI, Mar., 1892, p. 201, ⅓ col.; Exper. Station Rec., vol. III, Washington, Mar., 1892, pp. 517–520; Gard. and Forest, vol. v, Jan., 27, 1892, pp. 47–48.) (J. F. J.)

868. WEED, C. M. **Spraying crops: Why, when, and where.** <Rural Publishing Co., New York, 1892, pp. 108, illustrated.

Brief directions for combating some common insect and fungous pests. (B. T. G.)

(See also, Nos. 665, 670, 673, 684, 696, 697, 698, 703, 704, 706, 707, 710, 716, 717, 719, 720, 721, 723, 724, 726, 729, 734, 739, 740, 742, 743, 744, 746, 748, 750, 751, 754, 755, 756, 757, 761, 766, 770, 774, 775, 777, 778, 780, 871, and 885.

E.—PHYSIOLOGY, BIOLOGY, AND GEOGRAPHICAL DISTRIBUTION.

869. ACLOQUE, A. **Les champignons au point de vue biologique, economique et taxonomique.** <Paris, 1892, pp. 327, figs. 60.

The book is divided into thirteen chapters, the first of which treats of the nature of fungi. Chapters 2, 3, and 4 discuss anatomy, and 5, 6, 7, 8, and 9 deal with physiology of the fungi. In the tenth, eleventh, and twelfth chapters fungi from an economic standpoint are considered. The thirteenth and last chapter is devoted to classification, the systems of Tournefort, Micheli, Bulliard, Persoon, Link, Nees, Fries, and Léveille being briefly reviewed. Berkeley's system receives considerable attention, while Bertillon's is given in full. (B. T. G.)

870. [ANON.] **Parasitic fungus on locust.** <Mediterranean Nat., vol. I, Malta, Aug. 1, 1891, p. 44, ½ col.

Refers to experiments of Signor Trabut in Algiers, where *Botrytis acridiorum* has been found to destroy great numbers of locusts. Experiments are being made with a view of cultivating the parasite. (J. F. J.)

871. [ANON.] **Procès-verbaux, séance du 10 mai 1891.** <Ann. Soc. d'hort. et d'hist. nat. de l'Hérault, 2 sér., tome XXIII, Montpellier, May and June, 1891, p. 129.

MM. Sahut, Cathala, Barthélémy, Cachet, Ganzy, and Giardin were unanimous in declaring that abrupt variations of temperature are very favorable to the spread of the peach curl, *Exoascus deformans* Berk. M. Sahut stated that three methods of prevention had been tried, the Bordeaux mixture, decoctions of tobacco, and removal of the affected leaves. None of them were very successful. In 1890 the grape mildew (*Peronospora*) was not observed during the summer, and from May to September there was also an almost complete absence of dew. On the contrary, during September dew occurred on twelve days and there was an invasion of mildew. M. Galzin had found carbonate of soda better than lime for fixing copper sulphate. (E. F. S.)

872. BOARDMAN, E. R. **The cabbage worm disease.** <Insect Life, vol. III, Washington, June, 1891, pp. 409–410.

Gives account of spread of disease "Muscardine," destroying worms infecting cabbages. (J. F. J.)

873. Bolley, H. L. **Wheat rust—is the infection local or general in origin?** <Agric. Science, vol. v, Nov. and Dec., 1891, La Fayette, Ind., pp. 259–264.

Gives result of inquiries and details of experiments made to ascertain whether wheat rust mycelium persists in the tissues of host plants through the winter, and at what time the rust appears on the grain. Does not think spraying will be effectual in preventing rust. The uredospores are the chief agents of infection and may be carried for miles through the air without loss of vitality, and the general infection of fields throughout the country is thus accounted for. (J. F. J.)

874. Bourquelot, Em. **Matières sucrées contenues dans les champignons.** <Bull. Soc. Mycol., France, vol. 7, fasc. 4, Paris, Dec. 31, 1891, pp. 222–232.

Mannite was found in the following: *Psalliota arvensis* Schæff., young; *Tricholoma album* Schæff., adult; *T. sulfureum* Bull., young, adult; *T. resplendens* Fr., adult; *Lepiota excoriata* Schæff., young; *Hydnum repandum* L., young, adult; *H. squamosum* Schæff., adult; *Clavaria pistillaris* L., adult; *C. formosa* Pers., young. Trehalose was found in the following: young, *Hypholoma elæodes* Paul., *H. capnoides* Fr., *Stropharia æruginosa* Curt., *Flammula alnicola* Fr., *Hebeloma sinapizans* Fr., *H. crustuliniforme* Bull., *Claudopus variabilis* Pers., *Pleurotus ostreatus* Jacq., *Mycena polygramma* Bull., *M. galericulata* Scop., *Collybia longipes* Bull., *Clitocybe inversa* Scop., *C. geotropa* Bull., *Tricholoma cinerascens* Bull., *Lepiota excoriata* Schæff., *Amanita strobiliformis* Vitt., *A. nitida* Fr., *Bolbitus hydrophilus* Fr., *Coprinus micaceus* Bull., *C. atramentarius* Bull., *Cortinarius obtusus* Fr., *C. imbutus* Fr., *C. psammocephalus* Bull., *C. armillatus* Fr., *C. torvus* Fr., *C. cinnamomeus* L., *C. sublanatus* Sow., *C. elatior* Fr., *C. cærulescens* Schæff., *C. glaucopus* Schæff., *C. variicolor* Pers., *C. cyanopus* Secret., *C. crocolitus* Quel., *C. argutus* Fr., *Hydnum repandum* L. (E. A. S.)

875. Bourquelot, Em. **Sur la présence de l'amidon dans un champignon appartenant a la famille des Polyporées, le Boletus pachypus, Fr.** <Jour. Pharm. et chimie, 5e sér., t. xxiv, Paris, Sept., 1891, pp. 197–199.

Reports presence in the cells of the pseudoparenchyma of *Boletus pachypus* of a substance which gives starch reaction with iodine. This substance appears to be in an insoluble state apparently as an impregnation of the membrane. Refers to work of Belzung and L. Rolland on the subject. (D. G. F.)

876. Bourqelot, Em. **Sur la répartition des matières sucreés dans le cèpe comestible (Boletus edulis, Bull.) et le cèpe orangé (Boletus aurantiacus, Bull.).** <Jour. Phar. et Chimié, 5e sér. t. xxiv., Paris, Dec. 15, 1891, pp. 521–524.

Gives analyses of stipe, pileus and tubes of the hymenium of *Boletus aurantiacus* Bull. and *B. edulis* Bull. Finds that the stipe and pileus of these species alone contain the starch glucose or *mannite*, while the tubes of the hymenium remain free from these reserve materials. Reasons that these reserve materials are not present in this portion because consumed in the manufacture of the spores. Thinks this also explains the absence of dipterous larvæ from the hymenium. Refers to previous work on subject. (See ser. 5, t. XIX, p. 369; t. XXII, 413, 497. (D. G. F)

877. Brefeld, Oscar. **Recent investigations of smut fungi and smut diseases.** <Jour. Mycol., vol. vi, Washington, May 14, 1890. pp. 1–8; Sept. 10, 1890, pp. 59–71; April 30, 1891, pp. 153–164.

A translation of an address delivered in Berlin before the Society of Agriculturists in February, 1888. Deals with the nature of parasites causing smut, their mode of development, methods of cultivation, manner of infection, and general life history. (J. F. J.)

878. Cavara, F. **Note sur le parasitisme de quelques champignons.** <Rev. Mycol., vol. xiii, Toulouse, Oct., 1891, pp. 177–180.

Cites the following instances of fungi, which usually live as saprophytes, becoming parasitic to such an extent as to be decidedly injurious to vegetation: *Botrytis vulgaris* on branches of *Citrus*, *Dahlia*, and *Pelargonium zonale; Botrytis* n. sp. on *Tulipa gesneriana; Cladosporium herbarum* on raspberry, *Cycas revoluta*, *Fourcroya gigantea*, *Agave americana*, *A. salmiana*, and *A. rigida; Polyporus ulmarius* on elm roots. (E. A. S.)

879. Charrin, A. **La nature des sécrétions microbiennes.** <Rev. Gén. Sci. pure et appliq., 2 ann., Paris, Mar. 15, 1891, pp. 129–134.

General discussion of the subject. (E. F. S.)

880. Constantin, J. **Étude sur la culture des basidiomycètes.** <Rev. Gén. d. Bot., t. 3, Paris, Dec. 15, 1891, pp. 497–511, pl. 1.

After discussing in a general way the well-known methods of ancient and modern mushroom culture the author gives the results of his investigations upon the cultivation in nutrient media of *Nyctalis lycoperdoides* and *Marasmius oleæ*. Succeeded in producing from chlamydospores fully developed specimens of *Nyctalis*, with mature basidia, in this regard surpassing Brefeld in his cultivations of the same species. Uses as nutrient substrata upon which to grow the first species sterile slices of potato dipped in orange juice, slices of carrot, slices of turnip, leaves of the oak and beech, and fragments of other basidiomyceteous fungi. Finds the behavior of *Nyctalis* upon various substrata as indicative of the uncertain ground upon which *N. caliginosa*, *N. nauseosa*, and *N. microphylla* stand and reports the variation under different conditions of nourishment as very great. Finds, contrary to Brefeld, that spores of *Nyctalis* germinate easily upon the most diverse media and the parasitism of the species hinted at by Brefeld is made doubtful. In the cultivation of *Marasmius* the author used sterilized olive leaves and obtained pure spores by allowing basidiospores to fall in small glass plates filled with sterile water placed beneath the pileus. Suggests possible application of pure artificial cultures to the industry. (D. G. F.)

881. DEARNESS, J. **Poisoning from eating fungi.** <Farmers' Advocate, vol. XXV, London, Ont., p. 216, fig. 1.

Gives full account of a fatal case of poisoning attributed to eating of *Helvella esculenta* (Fries.). This species has hitherto been considered edible by Berkeley, Gilbert, Burnett, and Julius Parmer. While author thinks it is not clearly proven that the species is poisonous he decides it is unfit for use. (D. G. F.)

882. DEVAUX, HENRI. **Étude expérimentale sur l'aération des tissus massifs: Introduction a l'etude du mécanisme des échanges gazeux chez les plantes aériennes.** <Ann. Sci. Nat. Bot., sér., VII, vol. XIV, Paris, 1891, pp. 297–395, fig. 5.

In course of his extended investigations the author examined the common edible agaric *Psalliota campestris*. There is easy communication through the internal tissues, but the exterior is only slightly porous. The composition of the internal gas differed only slightly from the atmosphere, but varied somewhat from time to time. The proportion of oxygen may fall below 16 in 100. Seven analyses are given, and analogous results are said to have been obtained with another subject. The examination was made before the pileus was developed. (E. F. S.)

883. [EDITORIAL.] **A novel mode of using disease germs.** <Insect Life, vol. IV, Washington, Nov., 1891, p. 152.

Gives abstract of a circular of a French firm advertising for sale culture tubes for the destruction of the white grub. States methods recommended. (J. F. J.)

884. [EDITORIAL.] **Work in Algeria with a fungous disease of the locust.** <Insect Life, vol. IV, Washington, Nov., 1891, pp. 151–152.

Abstract of a paper by Künckel and Langlois on a disease caused by *Lachnidium acridiorum* n. sp. The experiments are not encouraging. (J. F. J.)

885. EYCLESHEIMER, A. C. **Club root in the United States.** <Jour. Mycol., vol. VII, No. 2, Washington, Mar. 10, 1892, pp. 79–80, pl. XV, XVI, figs. 2.

Discusses the distribution and general characters of the disease. This is followed by a detailed statement of the effect of the disease on the tissues of various plants, particularly cabbages and turnips. There is no known cure after the disease is established, but preventive measures may be effectual. Of all means tried lime seems to be the best. Sterilization of the soil of the hotbed is also recommended. A short bibliography is given at the end of the paper. (J. F. J.)

886. FORBES, S. A. **On a bacterial insect disease.** <Amer. Month. Micros. Jour., vol. XII, Washington, Nov., 1891, pp. 246–249.

Describes disease affecting chinch bugs, caused by *Micrococcus insectorum* Burr. No success has been met with in attempting to inoculate insects with the disease, because all examples examined were infected with the *Micrococcus* in question. (J. F. J.)

887. FRIES, ROB. **Om svampfloran i våra växthus.** <Bot. Notiser, Lund, 1891, pp. 145–157.

Fungi arranged in three groups: (1) Species which, under natural circumstances, are living in open air, but which accidentally may also occur in hothouses, often with a somewhat changed habit and appearance. (2) Species which *par préférence* are inhabitants of hothouses, and which do not occur in other places at least not in Sweden. (3) Species which have been accidentally introduced from southern lands. The second group includes several interesting species, most of which occur in great abundance, such as *Lepiota cepæstipes*, *Agaricus echinatus*, *A. volvaceus*, *A. parvulus*, *A. confertus*, *Polyporus cryptarum*, *Coprinus dilectus*, *Discina vaporaria*, and *Hydnangium carneum*. But very few species are mentioned as representing the 3d group *e. g. Hiatula benzonii*, *Agaricus geoglerius*, *Laschia testudinella*. (Theo. Holm.)

888. GALLOWAY, B. T. **Observations on the life history of Uncinula spiralis.** <Proc. Am. Asso. Adv. Sci., vol. XXXIX, July, 1891, Salem, Mass., p. 333, 3 lines.

Abstract (see No. 132). (J. F. J.)

889. GALLOWAY, T. W. **Notes on the fungus causing damping off and other allied forms.** <Trans. Mass. Hort. Soc., Part 1, Boston, 1891, pp. 10, pl. 2.

Records interesting observations on *Pythium debaryanum* and *Saprolegnia monoica* made in the cryptogamic laboratory, Harvard University. (B. T. G.)

890. GIARD, A. **Sur le champignon parasite des criquets pèlerins.** <Compt. rend. Acad. d. Sc., Paris, Dec. 7, 1891, pp. 813–816.

The author says that Prof. H. Trabut has found that *Lachnidium acridiorum* Giard is identical with the fungus found in different parts of Algeria on the same host. Older cultures of the fungus furnish evidence as to its systematic position. On the insects themselves it presented two different forms, designated *Cladosporium* and *Fusarium*, or *Fusisporium*. In young cultures the latter predominates. When the cultures become older chlamydospores make their appearance. From this time parts of the fungus pass through stages closely resembling the genera *Sarcinella*, *Stemphylium*, *Macrosporium*, and *Mystrosporium*. *Cladosporium herbarum* also passes through similar stages, and it is probable that the two fungi are closely related. It is also likely that the genera represented in the transformations are really not independent genera, but stages in the development of some Ascomycete. The *Lachnidium* closely resembles the *Fusarium* on violet leaves and chestnut trees. (E. A. S.)

891. Gosio, B. **Action of microphytes on solid compounds of arsenic; a recapitulation.** <Science, vol. xix, New York, Feb. 19, 1892, pp. 104-106.

A paper on the poisonous products derived from wall papers containing arsenic. Gives methods used to ascertain whether the arsenical vapors are due to the presence of parasitic molds (*Mucorini.*) By means of pure cultures of *Penicillium glaucum*, *Aspergillus glaucus*, and *Mucor mucedo*, it was found that the two latter, and more especially the last, gave rise to arsenical gas when grown in arseniated culture media. Experiments led to the conclusions: (1) that the Mucor grew vigorously in media containing considerable quantities of arsenic; (2) that many solid compounds of arsenic give off gases through the activity of the fungus which vegetates in contact with them; (3) this evolution of gas is constant and lasting in case of oxygen compounds of arsenic, including arsenite of copper; (4) in certain conditions of humidity, temperature, and light, arsenical gases are given off from hangings colored with Scheele's and Schweinfurth's green, through the vegetation of the *Mucor*, and there is danger in breathing these exhalations. (J. F. J.)

892. H., * * * G. **Suspicious fungi.** <Cult. and Count. Gent., vol. lvii, Albany, N. Y., Mar. 10, 1892, p. 187, ⅕ col.

Queries whether corn smut has any poisonous effect on cattle or whether two or three months in the silo would tend to destroy its vitality. Notes the disappearance of ergot from rye fields in recent years. (J. F. J.)

893. Halsted, B. D. **Autumn leaves disperse their molds.** <Am. Agric., vol. l, New York, Dec., 1891, p. 700, ⅓ col.

Refers to the distribution of fungous spores over wide areas by means of the wind. (J. F. J.) (See Kansas Weekly Capital, Topeka, May 5, 1892.)

894. Kienitz-Gerloff, F. **Die Protoplasmaverbindungen zwischen benachbarten Gewebes-elementen in der Pflanze.** <Bot. Zeit., Jahrg. 49, Leipzig, Jan. 2, 9, 16, 23, 30, 1891, pp. 1-10, 17-26, 33-46, 49-60, 65-74, pl. 2.

The paper deals mostly with the continuity of protoplasm in higher plants, but on p. 66 the implication is made that parasitic fungi obtain their nourishment from the host cell by secreting a diastase-like ferment. On p. 67 the author proposes the theory that the fungus hyphæ in lichens obtain their nourishment from the algæ cells by secreting an enzyme. Thinks protoplasmic connections may be found between the neighboring cells of fungi when not all the cells are equally engaged in absorbing nourishment. Further states that their presence is rendered more probable from the fact that pits have been observed in the hyphæ of *Hymenomycetes*. (W. T. S.)

895. Lagerheim, G. de. **The relationship of Puccinia and Phragmidium.** <Journ. Mycol., vol. vi, Washington, Jan. 6, 1891, pp. 111-113.

Gives differences usually stated as occurring between the two genera, especially in the teleutospores and uredospores, examining various species. Concludes there are points of resemblance between numerous species of the two genera. (J. F. J.)

896. Moult, M. Le. **Le parasite du hanneton.** <Compt. rend. Acad. d. sc., vol. cxiii, Paris, Aug. 3, 1891, pp. 272-274.

The author states that he has prepared cultures of the parasite on a large scale and urges the necessity of combating the beetle by infecting the soil before the transformation of the larva occurs. Has found spores produced both on the external mycelium and within the body of the larva, filling the latter with a whitish powder. Culture tubes infected with both kinds of spores and with parts of the body of a mummified larva have given identical results, the fungus produced having the same characters as that on the worm. (E. A. S.)

897. Osborn, Herbert. **On the use of contagious diseases in contending with injurious insects.** <Insect Life, vol. iii, Washington, Nov. 1, 1890, pp. 141-145.

Refers in a general way to the various diseases of insects, some of which are caused by fungi, and to the difficulties in their study. Gives an account of an attempt to introduce a disease of cabbage worms caused by a species of *Micrococcus*. Believes the disease may be transferred from place to place, but that it spreads very slowly and the final results are uncertain. (J. F. J.)

898. Pearson, A. W. **Constitutional health of plants.** <Gard. and Forest, vol. v, New York, Mar. 9, 1892, p. 118, 1¼ col.

Notes that at times the spores causing black rot destroy certain varieties of grapes and not others. The Ives is at times exempt when the Concord is destroyed. Queries whether antidotes for certain diseases might not be supplied plants through their absorptive systems. Healthy plants are better able to resist attacks of disease and when attacked are more likely to recover. An instance of this is given from the potato. (J. F. J.)

899. Pearson, A. W. **The constitutional health of plants.** <Gard. and Forest, vol. v, New York, Mar. 16, 1892, pp. 130-131, 1½ col.

Gives results of experiments with nitrate of soda as a preventive of strawberry leaf-blight. Considers that the immunity from disease was due to vigorous growth and the stimulating effect of nitrate. Pruning pear trees by stimulating growth prevented attacks of leaf-blight and cracking due to *Entomosporium maculatum*. (J. F. J.)

900. Riley, C. V. **Applied entomology in the United States.** <Am. Agric., vol. li, New York, Jan., 1892, pp. 38-40.

Refers incidentally to use of fungous germs for destruction of insects. (J. F. J.)

901. ROSEN, F. **Bemerkungen über die Bedeutung der Heterogamie für die Bildung und Erhaltung der Arten im Anschluss an zwei Arbeiten von W. Burck.** <Bot. Zeit., 49 Jahrg., Leipzig, Mär. 27., 1891, pp. 201–211, April 3, 1891, pp. 217–226.

Author considers the following works by W. Burck, "Ueber Kleistogamie im weiteren Sinne und das Knight-Darwin'sche Gesetz" (Annales du Jardin Botanique de Buitenzorg, vol. VII, pp. 122–164, taf. 4) and "Eenige bedenkingen tegen de theorie van Weismann aangaande de beteekenis der sexueele voortplanting in verband met de wet van Knight-Darwin" (Natuurkundig Tijdschrift voor Nederlandsch Indië, Diel XLIX (achtste serie, diel X, pp. 501–544, pl. I). Discusses the importance of cross-fertilization in plants and also Weismann's theory that variability depends on sexual reproduction. Most of the article discusses phanerogams, but on p. 225 he adduces the alga-like fungi as an example of plants which have sexual propagation and *Basidiomycetes* as example of a variable group, rich in species, which propagate exclusively by asexual means. Mentions that these fungi are chemically and histologically much differentiated. Mentions Uredineæ as progenitors of Basidiomycetes. Opposes the Knight-Darwin law and Weismann's theory. (W. T. S.)

902. SNOW, F. H. **Experiments for the destruction of chinch bugs in the field by the artificial introduction of contagious diseases.** <Insect Life, vol. III, Washington, Mar., 1891, pp. 279–284.

Gives details of experiments made in 1889 and 1890 to spread an infectious disease. Three diseases were noticed, one caused by *Entomophthora* or *Empusa*, one by a *Micrococcus*, and the third by a species of *Isaria* or *Trichoderma*. Numerous letters are quoted giving details of success of the work. (J. F. J.)

903. STOLLER, JAS. H. **Studies in plant biology. II.—The green mold.** <Pop. Science News, vol. XXV, Boston, Mar., 1891, pp. 33–34, 2 cols.

Describes briefly in popular language the biology of *Penicillium glaucum*. (D. G. F.)

904. STRATON, C. R. **The value of attractive characters to fungi.** <Science Gossip, No. 314, London, Feb., 1891, pp. 44–45.

Quotation of an article in "Nature," noticing the colors and odors of fungi, and advancing the idea that these are characters for attracting insects and animals to aid in the multiplication of the species. Says it is necessary for spores of *Agaricus campestris* to pass through the bodies of animals before they will germinate and produce mycelial threads. Believes this to be the case with other species also. (J. F. J.)

905. VAN BREDA DE HAAN, J. **Les Expériences de M. Beyerinck sur les Bactéries lumineuses et leur nutrition.** <Rev. géné. sci. pure et appli., 2e ann., Paris, Feb. 15, 1891, pp. 81–82.

Paper based partly on memoirs in *Archives néerlandaises des sciences exactes et naturelles*, tome XXIII, and partly on unpublished data furnished by the author. Six species of Photobacterium are distinguished, *Ph. phosphorescens*, *indicum*, *luminosum*, *balticum*, *fischeri*, and *pflugeri*. The first renders fish phosphorescent, the second is found in the waters of the Indian Ocean, the third on the coasts of Holland, and the others in the Baltic Sea. Beyerinck's culture methods are described, and especially a new method called auxanographie, whereby he is able to study the exact effect of nutrient substances simply or in combination. The phosphorescence can be produced or eliminated at will without destruction of the organisms, and is believed to be an accidental consequence of internal chemical processes. Different forms can be separated by their behavior toward diastases. Recently these photobacteria have been used to show that the Chamberland filter is germ-proof. (E. F. S.)

906. VAN TIEGHEM, M. D. **Prix Montagne (Commissaires: MM. Duchartre, Trécul, Chatin, Bornet; Van Tieghem, rapporteur).** <Compt. rend. Acad. d. sc., vol. CXIII, Paris, Dec. 21, 1891, pp. 920–922.

Notes the granting of this academic prize to Henri Jumelle for a manuscript memoir entitled, *Recherches physiologiques sur les Lichens*. This investigation was carried on in the laboratory of vegetable biology instituted by the faculty of sciences of Paris in the forest of Fontainebleau. M. J. devoted himself especially to the study of the exchange of gases taking place between lichens and the air under varying degrees of light, humidity, and heat. In obscurity both components of the lichen respire, and the respiratory quotient $\frac{CO_2}{O}$ is always less than unity, about 0.8 oxygen is fixed. In light, the assimilation of carbon, exclusively through the chlorophyll of the alga, predominates over respiration, although the latter continues in both alga and fungus. This predominance varies greatly according to the species and is less noticeable in proportion as the alga occupies less space. In fruticulose and foliaceous lichens it is strong and very noticeable even in diffused light. In crustaceous lichens it is feeble and only manifest in the sun. In all cases the quotient of assimilation $\frac{O}{CO_2}$ is greater than one and may rise to 1.5, 1.6, or even 1.8, a part of the liberated oxygen is therefore borrowed from some other source than the carbon dioxide of the air. Fruticulose and foliaceous lichens contain relatively little water, at most only four times their dry weight, and can not lose this without injury. Gelatinous lichens contain much water, even twenty-four times their dry weight, and can lose it all without injury. Moistened after complete drying they again take up the normal exchange of gases. Lichens bear great variations of temperature without injury. They are unchanged after three days at 45° C., after fifteen hours at 50°, after five hours at 60°. At these temperatures their respiration continues normal, but assimilation ceases after one day at 45°, three hours at 50°, and thirty minutes at 60°. Elevated temperatures therefore suppress the assimilation of carbon without diminishing the respiration—*i. e.*, change the alga without affecting the fungus. Lichens also resist very low temperatures, even below —40°. At —10° respiration is very feeble; at —20° it ceases entirely. On the contrary, the assimilation of carbon not only continues at these temperatures, but also at much lower ones, even —40°, when, by the freezing of a part of its water of constitution, the lichen has taken the consistency of a block of ice. Low temperatures therefore stop respiration while permitting the assimilation of carbon—*i. e.*, they affect the fungus and not the alga. By reason of the double constitution of lichens these two sorts of gaseous exchange which go on simultaneously in green plants in light can be separated by the action of heat, respiration only, carried on by the fungus, persisting at high temperatures and assimilation only, carried on by the alga, persisting at low temperatures. (E. F. S.)

907. Webster, F. M. **A podurid which destroys the red rust of wheat.** <Insect Life, vol. ii, Washington, Jan.–Feb., 1890, pp. 259–260.

Records a species of Neuropter (*Smynthurus*) feeding on uredospores of wheat rust (*Puccinia rubigo-vera*). While the spores eaten are destroyed, the hairs on the body of the insects serve to convey other spores from one plant to another and thus aid in distributing it. (J. F. J.)

See also Nos. 661, 721, 724, 732, 760, 769, 854, 933, and 939.)

F.—MORPHOLOGY AND CLASSIFICATION OF FUNGI.

I.—GENERAL WORKS.

908. Bailey, F. M. **Botany: Contributions to the Queensland flora.** <Dept. of Agri. Queensland, Bull. No. 9, Brisbane, May, 1891, p. 32.

Gives description of *Glœosporium pestiferum* Cke. & Mass., as occurring in the colony. (J. F. J.)

909. Bailey, F. M. **Contributions to the Queensland flora.** <Dept. Agric. of Queensland, Bull. No. 13, Brisbane, Dec., 1891, pp. 39, pl. 6.

Under fungi (pp. 36–38) gives list of species found with descriptive notes. No new species. (J. F. J.)

910. Bornet, M. **Prix Desmazières (Commissaires: MM. Duchartre, Van Tieghem, Chatin. Trécul; Bornet, rapporteur).** <Compt. rend. Acad. d. sci., vol. cxiii, Paris, Dec. 21, 1891, pp. 918–920.

Notes the conferring of this Academic prize on A. N. Berlese for meritorious work in Mycology, especially for three important publications. (1) A monograph of the genera *Pleospora*, *Clathrospora*, and *Pyrenophora*, forming a volume of 260 pages, accompanied by 12 colored plates, representing 111 species; (2) *Icones Fungorum ad usum Sylloges Saccardianæ accomodatæ*, of which great enterprise two parts illustrating Pyrenomycetes have been issued; (3) *Fungi moricolæ*, a volume containing 200 pages and 71 colored plates designed and lithographed by the author, and in which he has doubled the number of fungi known previously to occur on the mulberry, and brought out various other interesting facts, *e. g.*, that the fungous flora of the mulberry is quite different from that of the olive, but related to that of the elm and *Brousonetia*, and that certain groups of fungi are wholly wanting, notably the *Hypodermei*, wanting also on the orange. (E. F. S.)

911. Chatin, M. **Prix Thore (Commissaires: MM. Duchartre, Blanchard, Van Tieghem, Bornet; Chatin, rapporteur).** <Comp. rend. Acad. des sc., vol. cxiii, Paris, Dec. 21, 1891, p. 923.

Note on the conferring of this academic prize on MM. J. Constantin and L. Dufour for their *Nouvelle Flore des Champignons*. This flora, modeled on M. Gaston Bonnier's phænogamic flora, contains 3,812 figures, and has for its object the easy determination of all the fungi growing in France as well as of most European species. (E. F. S.)

912. Colenso, W. **An enumeration of fungi recently discovered in New Zealand.** <Trans. & Proc. New Zealand Inst. for 1890, vol. xxiii, Wellington, May, 1891, pp. 391–398.

Gives list of species collected in New Zealand as identified by M. C. Cooke in London, Eng. (J. F. J.)

913. Ellis, J. B., and Everhart, B. M. **New species of fungi.** <Jour. Mycol., vol. vii, No. 2, Washington, Mar. 10, 1892, pp. 130–135.

The following new species are described: *Puccinia suksdorfii* on leaves of *Troximon glaucum*: *P. agropyri* on leaves of *Agropyrum glaucum; Stictis compressa* on dead limbs of *Carpinus americana; Tryblidiella pygmæa*, on weather-beaten wood; *Valsaria hypoxyloides* on shrub or tree from Paraguay; *Phyllosticta gelsemii* on leaves of *Gelsemium sempervirens* (cult.); *P. rhododendri* on leaves of *Rhododendron catawbiense; Sphæropsis albescens* on dead limbs of *Negundo aceroides; Stagonospora spinaciæ* on spinach; *Septoria elymi* on leaves of *Elymus canadensis; S. jackmani*, on leaves of *Clematis jackmani; S. saccharina* on leaves of seedling *Acer saccharinum; S. drummondii*, on leaves of *Phlox drummondii; Hendersonia geographica*, on fallen and decaying chestnut leaves; *Glœosporium catalpæ*, on leaves of *Catalpa bignonioides; G. decolorans* on leaves of *Acer rubrum; Melanconium magnoliæ* on dead trunks of *Magnolia glauca; Pestalozzia lateripes* on dead legumes of *Cassia chamæcrista; Scolecotrichum caricæ* on leaves of *Carica papaya: Macrosporium tabacinum* on leaves of cultivated tobacco; *M. longipes* on the same; *Brachysporium canadense* parasitic on *Valsa ambiens?*; and *Clasterosporium populi* on leaves of *Populus tremuloides*, and *P. grandidentata*. (J. F. J.)

914. Ellis, J. B., & Halsted, B. D. **New fungi.** <Jour. Mycol., vol. vi, Washington, May, 1890, pp. 33–35.

Describe the following new species: *Phyllosticta molluginis* on *Mollugo verticillata; Septoria rudbeckiæ* on *Rudbeckia laciniata* and *R. hirta; Glœosporium cladosporioides* on *Hypericum mutilum; Cylindrosporium iridis* on *Iris versicolor; Zygodesmus pyrolæ* on *Pyrola rotundifolia; Cercospora lysimachiæ* on *Lysimachia stricta: C. cleomis* on *Cleome pungens;* and *Colletotrichum spinaciæ* on spinach. (J. F. J.)

915. Ellis, J. B., & Galloway, B. T. **New species of fungi.** <Jour. Mycol., vol. vi, Washington, May 14, 1890, pp. 31–33.

Describe the following new species: *Æcidium crepidicolum* on *Crepis acuminata; Ustilago (Sorosporium?) brunkii* on *Andropogon argenteus; Sorosporium ellisii* Winter, var. *provincialis* on *Andropogon provincialis; S. everhartii* on *Andropogon virginicus; Didymosphæria denudata* on dead oak limbs; *Ophionectria everhartii* on old *Diatrype stigma* and decaying bark of oak limbs; *Glœosporium paludosum* on *Peltandra virginica; Cercospora brunkii* on cultivated Geranium; *Dendrodochium subeffusum* on lichen thallus, and *Scoriomyces andersoni* on decaying *Pinus ponderosa.* (J. F. J.)

916. Ellis, J. B., & Langlois, A. B. **New species of Louisiana fungi.** <Jour. Mycol., vol. vi, Washington, May 14, 1890, pp. 35–37.

The following species are described: *Oidium obductum* on young *Quercus; Ovularia maclurœ* on *Maclura aurantiaca; Dactylaria mucronulata* on decaying hickory wood; *Coniosporium mycophilum* parasite on *Polyporus pergamenus* and *Lentinus ursinus; Hormodendron divaricatum* on rotten wood; *Cercospora alternantheræ* on *Alternanthera achyrantha; C. thaliæ* on *Thalia dealbata; Macrosporium carotæ* on *Daucus carota; Graphium squarrosum* on *Sambucus; Sphæridium lacteum* on decaying herbaceous stems; *Phyllosticta virens* on *Quercus virens; Vermicularia discoidea* on *Panicum proliferum; Haplosporella tingens* on *Andropogon muricatus; Diplodia bambusæ* on dead *Bambusa; D. cucurbitaceæ* on dead pumpkin vines; *Botryodiplodia varians* on dead *Lagerstræmia; Hendersonia tini* on *Viburnum tinus*, and *Prosthemiella hysterioides* on decorticated wood of *Salix nigra.* (J. F. J.)

917. Ellis, J. B., & Tracy, S. M. **A few new fungi.** <Jour. Mycol., vol. vi, Washington, Sept. 10, 1890, pp. 76–77.

The following species are described: *Phyllachora stenostoma* on *Panicum brizanthemum; Fusarium celtidis* on *Celtis occidentalis; Cladosporium velutinum* on *Phalaris canariensis; Puccinia apocrypta* on *Asprella hystrix; Uredo peridermiospora* on *Spartina glabra; U. nysseæ* on *Nyssa capitata; Ustilago buchloës* on *Buchloë dactyloides; Cintractia avenæ* on *Avena elatior; Sorosporium granulosum* on *Stipa viridula; Ustilago hilariæ* on *Hilaria jamesii*, and *U. oxalidis* in ovaries of *Oxalis stricta.* (J. F. J.)

918. Garcida, Manuel Martenes. **Catalogos de la Flora y Fauna del Estado de Oxaca.** <Imprenta del Estado á cargo de Ignacio Candiani, Oxaca, 1891, pp. ii, 116.

Gives an alphabetic list of plants on pp. 1–48, arranged by the common name, followed by the scientific name, family, and authority. Some fungi of the genera *Uredo* (*U. maidis* DC.), *Agaricus, Boletus, Hypophyllum* are given. (W. T. S.)

919. Karsten, P. A. **Fragmenta mycologica, XXXII..** <Hedwigia, Bd. xxx, Dresden, Sept. and Oct., 1891, pp. 246–248.

Notes on a number of old species, and descriptions of the following new species and varieties from Finland: *Mycena simillima* on decaying trunks; *Volvaria virgata*, Fr. v. *fennica* "in vaporariis;" *Cortinarius cinnamomeus* (Linn) Fr. v. *fusipes; Bjerkandera rosemaculata* on cut trunks of *Larix siberica; Ephelina aggregata* (Lasch) Karst (*Sphaeria aggregata* Lasch, in Rab. Herb. myc., ii, 541) *Zignoella boreella* on disks of *Valsa borealis; Monilia obducens* on bodies of alcoholic specimens of *Colubrus natrix; Fusariella cladosporioides* on living leaves of *Myrtus; Botrytis virella*, Fr. var. *ærugineoglauca* on decaying wood. (W. T. S.)

920. Karsten, P. A. **Fragmenta mycologica XXXIII.** <Hedwigia, Bd. xxx, Dresden. Nov. u. Dec. 1891, pp. 298–300.

Notes on old species and descriptions of following new species and varieties from Finland: *Psathyrella longicauda*, among rotten leaves; *Poria labyrinthica*, on decaying pine wood; *Peziza lætissima*, on rotten leaves; *Melanospora macrospora*, on decaying tubers of *Brassica napus* var. *napobrassica; Botrytis laxissima*, on decaying substances on damp ground; *Hymenula vulgaris*, Fr. var. *brassicæ*, on decaying tubers of *Brassica napus* var. *napobrassica; Symphyosira alba*, on wood in fields. (W. T. S.)

921. Karsten, P. A. **Fragmenta mycologica XXXIV.** <Hedwigia, Bd. xxx, Dresden, Nov. u. Dec. 1891, pp. 300–303.

Gives notes on old species and descriptions of the following new species and varieties: *Pistillaria cylindracea*, on petioles of decaying leaves of *Alnus incana; P. fulvida*, on decayed leaves of *Cornus sanguinea; Discinella* n. g. [Pezizaceæ]; *D. corticalis*, on dead trunks of *Lonicera tartarica; Pestalozzia inquinans*, on living leaves of *Camellia; Fusicladium livistoniæ*, on petioles of living leaves of *Livistonia chinensis; Cylindrium flexile*, on branches of *Tilia* and *Pyrus; Hymenula microsporella*, on decaying tubers of *Brassica napus* var. *napobrassica; Myropyris guttiformis*, on the interior of decaying bark; *Hormiactis nectriæ*, on *Nectria coccineum; Sporotrichum vile*, on *Cladosporium* on stems of *Brassica napus.* (W. T. S.)

922. Lagerheim, G. **Observations on new species of fungi from North and South America.** <Jour. Mycol., vol. vii, Washington, Sept. 10, 1891, pp. 44–50.

Describes a hollyhock disease caused by a new species of fungus, *Puccinia heterogenea;* a new cotton rust caused by *Uredo gossypii;* a new *Doassansia* on cotton, called *D. gossypii;* and a new *Peronospora* on *Gonolobus* from South Carolina, called *P. gonolobi.* The first three species are from Ecuador. (J. F. J.)

923. LUDWIG, F. **Contributions on the fungal flora of Australia.** <Trans. Roy. Soc. South Australia, vol. XIV, Adelaide, July, 1891, pp. 55–60.

Part I deals with the rusts and smuts (*Uredineæ* and *Ustilagineæ*) giving a list of 45 species. Part II gives a list of the fungous enemies of Eucalyptus and Acacia, 22 in all. Of these, the following are named as new species, the authority given being Saccardo, except for the last. No descriptions are given. *Ceriomyces incomptus*, *Rhamphoria tenella*, *Phyllosticta phyllodiorum*, *Septoria phyllodiorum*, and *Uredo notabilis* Ludw. Part III is on the position of *Clathrus (Ileodictyon) tepperianus* Ludw., noting that it should probably be united with *C. gracilis* and *C. cibarius* under the latter name. (J. F. J.)

924. PLOWRIGHT, C. B., WARD, H. G., and ROBERTSON, J. **List of fungi found at Sterling on 26th and 27th October, 1891.** <Ann. Scot. Nat. Hist., vol. I, Edinburgh, Jan., 1892, pp. 68–69.

A list of species without notes. (J. F. J.)

925. RACIBORSKI, M. **Ueber einige Pilze aus Südrussland.** <Hedwigia, Bd. XXX, Sept. u. Oct. 1891, Dresden, pp. 243–246.

Gives a list of 27 species (1 *Cystopus*, 2 *Ustilago*, 6 *Uromyces*, 7 *Puccinia*, 3 *Gymnosporangium*, 1 *Phragmidium*, 2 *Melampsora*, 3 *Æcidium*, 1 *Rhytisma*, 1 *Pleospora*), with localities and host plants. Gives notes on *Uromyces lævis* Kœrnicke, making Sydow Ured. No. 161 on *Euphorbia gerardiana*, *U. lævis* var. *trachyspora* and Rabenhorst Herb. Myc. No. 299 (pro parte); on *Euphorbia verrucosa* he makes *U. scutellatus* Schrank var. *leptoderma*. Thinks Magnus and Dietel may be mistaken in referring *U. lævis* to *Uredo excavata* DC., which the author thinks more probably identical with *Melampsora euphorbiæ dulcis* Otth. (W. T. S.)

926. RICHON, CH. **Liste alphabétique des principaux genres mycologiques dont les spores, sporidees et conidies sont représentées fortement amplifiées, avec l'indication de leurs dimensions réelles.** <Rev. Mycol., vol. XIII, Toulouse, Oct., 1891, pp. 160–162, pl. CXX–CXXIV.

An alphabetical list of typical species selected to illustrate 287 genera beginning with *Leptosphærites lemoinii*. Each species enumerated is illustrated. (E. A. S.)

927. ROLLAND, L. **Quelques champignons nouveaux du Golfe Juan.** <Bull. Soc. Mycol. France, vol. VII, fasc. 4, Paris, Dec. 31, 1891, pp. 211–213, pl. XIV.

Describes the following: *Calosphæria punicæ*, *Amphisphæria cocos*, *Gibberella trichostomi*, *Mollisia ericæ*, *Glæosporium suberis*, *Stictis opuntiæ*. (E. A. S.)

928. ROUMEGUERE, C. **Fungi exsiccati precipue Gallici, LX^{e} centurie.** <Rev. Mycol., vol. XIV, Toulouse, Jan. 1, 1892, pp. 1–11.

List of 100 fungi and their hosts, containing the following new species: *Phacidium jacobææ* Faut. and Roum., on *Senecio jacobæa; Calloria medicaginis* Faut. and Roum., on *Medicago sativa* form *meliloti* on *Melilotus officinalis; Saprolegnia quisquiliarum; Didymosphæria ammophilæ* Faut. and Roum., on *Ammophila arenaria; Læstadia mespili*, on *Mespilus germanica; Venturia furcata* on *Sabina; Leptosphæria viticola* Faut. and Roum., on *Vitis vinifera; L. phaseoli* Faut. and Roum., on *Phaseolus nanus; L. melanommiodes*, on *Phaseolus nanus; L. sambuci*, on *Sambucus nigra; Hendersonia peregrina*, on *Phœnix dactylifera; H. calospora*, form *unioeæ*, on *Uniola latifolia*, form *poæsudeticæ*, on *Poa sudetica*, form *ammophilæ* on *Ammophila arundinacea; H. culmifraga*, on *Uniola latifolia; Dendrophoma didyma* Faut and Roum., on *Quercus pedunculatus; Rhabdospora campanulæ*, on *Campanula trachelium; Ramularia picridis* Faut and Roum., on *Picris hieracioides; R. beccabunga*, on *Veronica beccabunga; Balacotricha lignorum* Faut and Roum., on rotten oak plank. (E. A. S.)

929. ROUMEGUERE, C. **Fungi Gallici exsiccati.** <Rev. Mycol., vol. XIII, Toulouse, Oct., 1891, pp. 163–173.

A list of 100 fungi, containing also names of hosts, synonyms and localities. Several new species are described: *Thyridium betulæ*, on *Betula alba; Sphærella acerna*, on *Acer campestre; S. nigrificata* Faut. & Roum., on *Agrostis stolonifera; S. juniperi* Faut. and Roum., on *Juniperus communis; S. maculata*, on *Prunus mahaleb; Leptosphæria rumicis*, on *Rumex patientia: Lophodermium sabinæ*, on *Juniperus sabina; Coniothyrium phalaridis* Faut. and Roum., on *Phalaris arundinacea; Phoma solani-lycopersici* Faut. and Roum., on *Solanum lycopersicum; P. populi-tremulæ*, on *Populus tremula; Cytospora viburni* Faut. and Roum., on *Viburnum lantana; Rhabdospora aconiti*, on *Aconitum napellus; Diplodia sambucicola*, on *Sambucus nigra; Pestalozzia sabinæ* on *Juniperus sabina; Myxosporium sabinæ* Faut. and Roum., on *Juniperus sabina; Coryneum avellanæ* on *Corylus avellana; Trinacrium variabile* on *Solanum lycopersicum; Dendrodochium lignorum*, on oak bark; *Fusarium discoideum* Faut. and Roum., on *Sambucus nigra*. (E. A. S.)

930. SACCARDO, P. A. **Rathschläge für die Phytographen, insbesondere die Kryptogamisten.** <Hedwigia, Bd. XXX, Dresden, Jan. u. Feb. 1891, pp. 56–59.

Recommends the following rules to phytographers: (1) Give concise diagnoses of a new species, not extended accounts of its morphology and biology without any clear statement of its distinguishing characters; (2) Diagnoses should be in clear and concise form, giving the important and distinctive characters; remarks on details should be given after the diagnosis, and it is necessary to indicate the relationships of the species; (3) The name of the original author of a species that has been removed to another genus should be given in parenthesis as the author of the species, and outside the parenthesis should be placed the name of the person who transferred the species to another genus; (4) The scientific name of the host organism should always be given in describing parasitic species; (5) The metric system should be used in giving the size of organs; for microscopic measurements, micromillimeters or mikra (μ) are to be employed instead of fractions; (6) For expressing concisely the dimensions of microscopic organs the length should first be given, then the width, the numbers being connected by the sign $\overset{\smile}{\smile}$ and the sign μ omitted. The sign $\overset{\smile}{\smile}$ (which the author proposed in 1872) has the advantage over the signs =, : , × of not having a different and definite meaning in mathematics; (7) All names of all groups of plants should be in the feminine gender—Hymenomyceteæ, not Hymenomycetes; (8) A distinct nomenclature based upon normal examples of colors should be followed; (9) It would be useful in case of fungi to use only the following names for fruits and spores, since these names are already in use by most mycologists; *Hymenomyceteæ*, pileus, basidia, sterigmata, sporæ, cystidia; *Gasteromyceteæ*. and *Myxomyceteæ*, peridium, gleba, capillitium, floeci, sporæ; *Uredineæ*, sorus, uredosporæ, teleutosporæ, mesosporæ, pseudoperidium, æcidiosporæ, paraphyses; *Phycomyceteæ*, oögonia, oösporæ, antheridia, spermatia, zygosporæ, azygosporæ, zoösporangia, zoösporæ; *Pyrenomycetaceæ* and *Phymatosphæriaceæ*, stroma, perithecium, loculus, ascus, sporidia, paraphyses; *Discomyceteæ*, and *Tuberoideæ* ascoma, gleba, ascus, sporidia, paraphyses; *Schizomyceteæ*, filamenta, baculi, cocci, endosporæ, anthrosporæ; *Sphæropsidæ*, [sic] perithecium, basidia, conidia (but not *gonidia*, a term to be restricted to lichens); *Hyphomyceteæ*, cæspitulus, sporodochium, hyphæ, sporæ. The promycelium originating from the germinating spore generally bears sporidiola. (W. T. S.) (See No. 565; also Bot. Gaz., vol. XVI, May, 1891, pp. 153–155.)

931. SPEGAZZINI, CAROLO. **Fungi guaranitici nonnulli novi v. critici.** <Revista Argentina Hist. Nat., vol. 1, Buenos Aires, Dec. 1, 1891, pp. 398–432.

Gives notes on many species and descriptions of the following new ones: *Æcidium convolvulinum* on *Convolvulaceæ; Æ. talini* on *Talinum patentis; Æ. xanthoxylinum* on *Xanthoxylum; Æ. calyculatum* on *Hamelia* sp.; *Æ. ochraceum* on *Tabernæmontanum; Æ. asclepiadinum* on *Morreniæ; Tuberculina talini* on *Talinum patentis; Meliola obesula* on *Rutaceæ; M. lævipoda* on *Aspidosperma quebrachii; M. harioti* on *Bignoniaceæ*(?) and *Leguminosæ*(?); *M. sapindacearum* on *Sapindaceæ; Dimerosporium? ovoideum* on *Gramineæ; D. superbum* on *Croton* sp.; *Broomella phyllocharis; Phyllachora læviuscula* on *Rubiaceæ; P. quebrachii* on *Aspidosperma quebrachii; P. subtropica; P. gentilis* on *Eugenia; P. acutispora* on *Gramineæ; Microthyrium acervatum* on *Rutaceæ; Seynesia? nebulosa* on *Myrsine; Asterina sphærebloides; Trichothyrium fimbriatum; Micropeltis vagabunda* on *Aspidosperma quebrachii; M.*(?) *balansæ; Lembosia nobilis; Peziza edulis* on earth; *Phyllosticta eryngii* on *Eryngium pandanifolium; Chætophoma chlorospora* on *Randia; Rabenhorstia discoidea* on decaying *Carica; Pseudopatella* (n. gen.); *P. lecanidion* on *Citrus aurantiacus; Septoria eugenicola* on *Eugenia; S. eugeniarum* on *Eugenia; Leptothyrium magnum* on *Nectandra; L. ampullulipedum* on *Lauraceæ; Asterostomella cristata* on *Rutaceæ; A. subreticulata* on *Cestrus pubescens; A. cingulata* on *Euphorbiaceæ; Melasmia pulchella* on *Eugenia; Melophia macrospora* on *Eugenia; M. superba* on *Myrtus guaviyus; Glœosporium tabernæmontanæ* on *Tabernæmontanum; Melanconium? bambusinum* on *Bambusaceæ; Cylindrosporium olyria* on *Olyria; Oospora versicolor; Heterosporium chloridis* on *Chloris; Sarcinella? solanicola* on *Solanaceæ;* and *Atractium? cronartioides* on *Bignoniaceæ*. (J. F. J.)

932. TOLF, ROBERT. **Mykologiska notiser från Småland I. Uredineer, Peronosporéer, Perisporiacéer.** <Botan. Notiser, Lund, 1891, pp. 211–220.

The author gives a list of fungi collected in Småland (Sweden). About 100 species of *Uredineæ*, 30 *Peronosporaceæ*, and 19 species of *Perisporiaceæ* are enumerated. No new species are recorded. (Theo. Holm.)

II.—CHYTRIDIACEÆ.

933. DANGEARD, P. A. **Mémoire sur quelques maladies des algues et des animaux, phénomenès de parasitisme.** <Le Botaniste, 2e sér., Paris, 12 Aôut 1891, pp. 232–264, pl. 4.

The author divides the memoir into three chapters, the first relating to parasites found upon marine algæ growing in the maritime laboratory of *Luc-sur-Mer*, the second to diseases found in the cultures of fresh-water algæ, and the third to a few diseases of lower animals. In Chapter I are described, with figures, *Ciliophrys marina* n. s. (saprophytic) and *Aphelidium lacerans* De Bruyne (parasitic) on *Ulva lactuca*, and *Olpidium aggregatum* n. s. on *Cladophora marin*, notable as being a member of the family *Chytridiaceæ* on a marine alga. Chapter II treats of the monadine, *Endomonadina concentrica* nov. gen., nov. sp., producing an epidemic disease of *Palmella hyalina* (?); of *Minutularia elliptica*, n. s. on alga undetermined, which, together with the *Chytridium destruens* Nowak, placed by Dangeard in *Minutularia*, form a small genus by themselves on *Draparnaldia glomerata*, causing a true epidemic *Chytridium mamillatum* Braun. on *Conferva bombycina; Chytridium assymetricum*, n. sp. on *Zygnema; C. sphærocarpum* (*Rhizidium*, Zoph) on *Zygogonium; Micromyces zygogonii*, Dangeard, on divers algæ, Oscillarias and Nitellas; *Gymnophrydium hyalinum*, n. g., n. sp. on *Euglena; Nuclearia minima*, n. sp.. *N. delicatula* Cienk, and *Platoum* (*Clamydophrys*) *stercoreum*, Cienk, on *Closterium; Antlea Closterii*, n. g., n. s., *Nuclearia simplex* Cienk. and *Bacillus closterii*, n. sp.. are also described. Chapter III describes the following diseases; *Harposporium anguillulæ* Lohde, on Anguillæ, and a bacterial disease of *Ophrydium versatile*, which suggests to the author that the struggle between the nucleus of the cell attacked and the bacteria is prolonged by the former's peculiar long ribbon shape. Throws out suggestion that the nuclei of the cells of fungi and higher plants, as well as of animal cells, are principally storehouses of food for the surrounding protoplasm, and the protoplasm dies only when the stock of nutriment in the nucleus is exhausted. (D. G. F.)

(See also, Nos. 736 and 832.)

III.—OOMYCETES.

934. SWINGLE, W. T. **Some Peronosporaceæ in the herbarium of the Division of Vegetable Pathology.** <Jour. Mycol., vol. VII, No. 2, Washington, Mar. 10, 1892, pp. 109–130.

Gives notes, with mention of localities, on 46 species of *Peronosporaceæ*. *Albugo* Persoon=*Cystopus* Lév. Tables of measurements are given of conidia of *Plasmopara gonolobi*, and of oöspores of *Peronospora cynoglossi*, and *P. echinospermi*. *P. echinospermi* Swingle=*P. cynoglossi* var. (?) *echinospermi*. (J. F. J.)

935. Waite, M. B. **Description of two new species of Peronospora.** <Jour. Mycol., vol. vii, No. 2, Washington, Mar. 10, 1892, pp. 105–109, pl. xvii.

Describes two new species under names of *Peronospora celtidis* on *Celtis occidentalis*, and *P. hydrophylli* on *Hydrophyllum virginicum*. (J. F. J.)

(See also, Nos. 695, 716, 724, and 889.

IV.—ZYGOMYCETES.

936. Mayer, W. **Die Hefereinzucht und ihre Bedeutung für die Gährungs-Industrie.** <Der Technicker. Internat. Fachbl. teckn. Wissensch., Jahr. xiv, No. 4, New York, Feb., 1892, pl. 1, figs. 3.

A review of recent progress in the matter of using pure yeast. Mentions and figures *Mucor mucedo*. Nothing original is given on fungi. (W. T. S.)

(See also, No. 736.)

V.—BASIDIOMYCETES.

937. A., * * * T. E. **Gigantic puffball.** <Science Gossip, No. 324, London, Dec., 1891, p. 281, ⅙ col.

Notes a specimen of *Lycoperdon boviata* [sic] found in Suffolk, 4 feet in circumference. (J. F. J.)

938. [Anon.] **An edible fungus of New Zealand.** <New Zea. Journ. Sci., new ser., vol. i, Dunedin, Mar., 1891, pp. 55–58.

Refers to *Hirneola polytricha* Mont. and quotes from Colenso in Trans. of Penzance Nat. Hist. and Antiq. Soc., 1884–'85, a description of same. In 12 years 1,850 tons 11 cwt., valued at £79,752, were exported. Notes analysis made by A. H. Church. (J. F. J.)

939. [Anon.] **Exportation de Champignons néo-zélandais en Chine.** <Rev. Sci. Nat. Appli., vol. xxxviii, Paris, Aug. 5, 1891, pp. 237–238.

Note from a Kew Bulletin on the chemical composition and commercial importance of *Hirneola polytricha*. (E. F. S.)

940. Bing, F. G. **Curious growth of fungi.** <Science Gossip, No. 325, London, Jan., 1892, p. 22, ⅔ col.

Describes a specimen of *Agaricus* sp. (?) in which three individuals were united. Notes also that where turf had been removed the place was marked by a ring of toadstools. (J. F. J.)

941. Ellis, J. B., and Everhart, B. M. **Mucronoporus andersonii, n. sp.** <Jour. Mycol., vol. vi, Washington, Sept. 10, 1890, p. 79.

Description of species as given in title. (J. F. J.)

942. Fischer, Ed. **Beiträge zur Kenntniss exotischer Pilze. II. Pachyma cocos und ähnliche sklerotienartige Bildung.** <Hedwigia. Bd. xxx, Dresden, März u. April, 1891, pp. 61–103, pl. vi–xiii.

The paper deals with various tuberiform fungous bodies, most of which have long been known. On pages 62–79 is given a full description of *Pachyma cocos*, Indian bread, or tuckahoe, prefaced by a summary of our previous knowledge on the subject. The author describes the anatomy of the tuberiform bodies, recognizing three component parts, hyphæ, smooth, refractive bodies, and striated lumps, also highly refractive. All of these are considered to be of fungous nature and the author shows that the hyphæ are changed into the refractive bodies, and that often the two can be seen still in actual connection and the intermediate stages of the change traced. Intermediate stages can also be observed between the refractive bodies and the striated lumps. Then the author gives a description of the connection of the *Pachyma* with the roots of trees in two specimens at his disposal. In both cases the wood was of a dicotyledonous plant, and not of a conifer, which is opposed to a prevailing idea as to their mode of occurrence. The hyphæ were found to enter the wood cells, swell up to refractive bodies and finally to dissolve the wood. On pages 79–97 the sclerotium of *Polyporus sacer* Fr. is fully described and illustrated with plates. The sclerotium is composed of delicate hyphæ, rounded or oval refractive bodies, much like starch grains in appearance, and smaller swollen thick-walled cells rich in protoplasmic contents. The oval bodies show concentric stratification when treated with KHO or other solvents. They are not connected with the hyphæ, though very rarely one could be seen that bore a filamentous prolongation. The author concludes, however, that the oval bodies arise from the hyphæ, as do the irregular refractive bodies of *Pachyma*. Considers *Polyporus scleropodius* Lév. as very probably the same as *Polyporus sacer* Fr. On pages 97–102 short accounts are given of *Tuber-regium* producing *Lentinus tuber-regium* Fr. and a number of other *Lentinus*-producing sclerotia; of *Mylittia lapidescens* Horan. producing *Agaricus* (*Omphalia*) *lapidescens* (Horaninow) F. Conn. and J. Schroeter; of *Sclerotium stipitatum* Berkeley, which the author considers as being a fructification of a fungus and not a sclerotium; and finally a notice of *Pietra fungaja* of south Italy, which produces *Polyporus tuberaster* Jacq. (W. T. S.)

943. Fischer, Ed. **Nachtrag zur Abhandlung über Pachyma cocos.** <Hedwigia, Bd. xxx, Dresden, Juli u. August, 1891, pp. 193–194.

Supplementary to No. 942; adds a notice of a paper by J. Schrenk and one by H. N. Ridley which had not been seen by the author when the original paper was written. Corrects a reference to the views of Murray as to the identity of *Lentinus scleroticoia* Murray and *L. cyathus* B. & Br. (W. T. S.)

944. Fischer, Ed. **Notice sur le genre Pachyma.** <Rev. Mycol., vol. xiii, Toulouse, Oct., 1891, pp. 157–160.

Shows that the coralloid refringent bodies are of fungous origin and in direct connection with the hyphæ of the sclerotium. Describes their formation, and the relation of the fungous to the wood of the host. Judging from the resemblance of *P. cocos* to *P. malacense*, the author is inclined to the belief that the former is also a sclerotium form of a Hymenomycete. In the case of *P. malacense* he shows that the *Polyporus* growing from it is produced from the hyphæ of the sclerotium. (E. A. S)

945. Griset, Henry E. **Large fungi.** <Science Gossip, No. 322, London, Oct., 1891, p. 239, ⅙ col.

Gives dimensions of specimens of *Lycoperdon giganteum* and *Phallus impudicus*. One of the former was 11 inches "long;" another was 22½ inches in circumference. The *Phallus* was 9¾ inches high with a stipe 1½ inches in diameter. (J. F. J.)

946. Griset, Henry E. **Observations on Phallus impudicus.** <Science Gossip, No. 325, London, Jan., 1892, pp. 16–17, fig. 3.

Describes appearance and growth of the fungus with mention of measurements of a large specimen, 13 inches high, pileus 3½ inches long, column 2 inches in diameter, volva 4 inches long and ½ half inch thick. (J. F. J.)

947. Hariot, P. **Sur quelques champignons de la Flore d'Oware et de Bénin de Palisot Beauvois.** <Bull. Soc. Mycol., France, vol. vii, fasc. 4, Paris, Dec. 31, 1892, pp. 203–207.

Gives a historical discussion of the genus *Favolus*, notes on the synonomy of *Dædalea amanitoides* (Pal.) Beauv., and notes and description of the genus *Microporus* Pal. To these are added the descriptions of two new species of *Hexagona*, *H. deschampsii*, and *H. elegans*. (E. A. S.)

948. K. ———. **Review of "Illustrations of British fungi," by M. C. Cooke.** <New Zea. Journ. Sci., new ser., vol. i, Dunedin, Nov., 1891, pp. 264–265.

Brief notice of the book, with mention of fact that only 30 species of Agaricini have been so far described from New Zealand. (J. F. J.)

949. Kirtikar, K. R. **Notes on a rare fungus growing on the drumstick tree.** <Jour. Bombay Nat. Hist. Soc., vol. vi, Bombay, 1891, pp. 219–222, pl. A.

Describes species growing on *Moringa pterygosperma*, for which, if new, the name *Agaricus* (*Pleurotus*) *moringanus* is proposed. (J. F. J.)

950. Massee, George. **Mycological Notes. II.** <Jour. Mycol., vol. vi, Washington, April 30, 1891, pp. 178–184, pl. 1 (vii).

Gives notes on many species, with changes in nomenclature, and describes the following as new: *Sarcomyces* n. gen., *Dacryopsis* n. gen. (J. F. J.) (See No. 636.)

951. Meschinelli, L. **Di un probabile agaricino miocenico.** <Atti d. Soc. Veneto-Trentina di Sc. Nat., vol. xii, Padova, 1891 (1892), pp. 310–312, pl. 1.

Describes a fossil species of Agaricus in honor of Lester F. Ward, *Agaricus wardianus*, collected at Chiavon, in the Province of Vicenza, situated in the ash-colored marls belonging to the Aquitanian, corresponding in part to the base of the strata of Sotzka, and belonging like it to the base of the lower Miocene. The author figures peculiar perpendicular and horizontal striations upon the fossil which have no analogues in living species and make the determination doubtful. Microscopic examination revealed no spores or hyphæ. (D. G. F.)

952. Moxon, R. **Huge puffballs.** <Science Gossip, No. 323, London, Nov., 1891, pp. 261–262, ⅕ col.

Records a specimen of *Lycoperdon giganteum*, found in Surrey, 36 inches in circumference and 34 inches round the top. (J. F. J.)

953. Patouillard, N. **Podaxon squamosus, nov. sp.** <Bull. Soc. Mycol., France, vol. vii, Paris, Dec. 31, 1891, p. 210, pl. 1 (xiii).

Gives a technical description of the fungus and an uncolored plate, natural size. (E. A. S.)

954. Prillieux & Delacroix. **Hypochnus solani, nov. sp.** <Bull. Soc. Mycol., France, vol. vii, Paris, Dec. 31, 1891, pp. 220–221, fig. 1.

Gives popular and technical description of the fungus. (E. A. S.)

955. Tanaka, Nobujiro. **A new species of Hymenomycetous fungus injurious to the mulberry tree.** <Jour. Coll. of Sci. Imp. Univ. Japan, vol. IV, Tokyo, 1891, pp. 193–204, pl. 4.

Describes the morphology and discusses the systematic position of a fungus producing the disease known as "Mompa byo." Fungus first attacks roots and spreads to parts above ground. Name proposed for it is *Helicobasidium mompa*. (J. F. J.)

956. Voglino, P. **Nota micologica.** <Nuovo Gior. Bot. Ital. (Bull. d. Soc.), vol. XXIII, Firenze, April 6, 1891, pp. 550[350]–353.

Gives list with notes of fungi, mostly Hymenomycetes collected near Casale, citing a few not previously recorded for Italy. (D. G. F.)

(See also, Nos. 882 and 923.)

VI.—UREDINEÆ.

957. Anderson, F. W. **Notes on certain Uredineæ and Ustilagineæ.** <Jour. Mycol., vol. VI, Washington, Jan. 6, 1891, pp. 121–127.

Refers to species of Æcidium, Puccinia, etc., giving notes on synonomy. Describes as new *Æcidium palmeri* on *Pentstemon virgatus*, *Puccinia windsoriæ* var. *australis*, and *P. kamtschatkæ*, the last from the collection of the U. S. Explor. Expedition. Gives also notes on other species collected by the expedition. (J. F. J.)

958. Barclay, A. **On two autœcious Cæomata in Simla.** <Scien. Mem. by medical officers Army of India, part VI, Calcutta, 1891, pp. 65–69, pl. 1; also reprinted.

Describes a new variety *himalayensis*, of *Puccinia prenanthes* Pers. occurring on leaves of *Prenanthes brunoniana* Willd., and *Lactuca macrorhiza* Hook. f. All three stages were found and the author thinks the fungus is autœcious, though he did not succeed in definitely proving it. Figures of the species are given. Then he describes a new species, *Puccinia prainiana*. Author has found all stages of this fungus on *Smilax aspera* and succeeded in producing the spermogonia by infection with teleutospores. Gives figures of the species. General remarks are appended on the *Cæomata* calling attention to the fact that they have been supposed to be connected with species of *Melampsora*. The author contends that this view is incorrect, as some *Melampsoræ* do not have *Cæomata* as æcidial stages and, moreover, the two *Pucciniæ* mentioned in the present paper have true *Cæomata* as æcidia. Thinks no longer a reason for maintaining the genus *Cæoma*. (W. T. S.)

959. Barclay, A. **Rhododendron Uredineæ.** <Scien. Mem. by medical officers Army of India, part VI, Calcutta, 1891, pp. 71–74, pl. 2; also reprinted.

Records finding of *Chrysomyxa himalense* Barclay on *Rhododendron hodgsoni* Hook. f. at Lingtu in Sikkin at 11,500–12,000 ft. The species was originally found on *R. arboreum*. Describes a new *Uredo* on *Rhododendron lepidotum* Wall., no specific name being given to the species. Also describes *Æcidium rhododendri* on *R. campanulatum* Don. Gives an interesting discussion of the relations between these forms and the *Uredineæ* on *Picea morinda* in India and *P. excelsa* in Europe. (W. T. S.)

960. Cuboni, G. **Sulla presenza di bacteri negli acervuli della Puccinia hieracii (Schumacher).** <Nuovo Gior. Bot. Ital. (Bull. d. Soc.), vol. XXIII, Firenze, 6 April, 1891, p. 296.

Records the constant presence in the pustules of *Puccinia hieracii* on *Leontodon hastilis* of numerous colonies of bacteria which give to the spots a pallid diffused surrounding ring. The presence of the organisms seems confined to the older sori. Organisms not cultivated. (D. G. F.)

961. Dietel, P. **Beschreibung einer neuen Puccinia auf Saxifraga.** <Hedwigia, Bd. XXX, Dresden, März u. April, 1891, pp. 103–104.

Description of *Puccinia pazschkei* on leaves of *Saxifraga elatior* from near Franzenshöhe, Tirol, and on *S. aizoon* from Switzerland. The differences between this species and *P. saxifragæ* Schlecht. are pointed out. (W. T. S.)

962. Dietel, P. **Notes on some Uredineæ of the United States.** <Jour. Mycol., vol. VII, Washington, Sept. 10, 1891, pp. 42–43.

Discusses some statements made by F. W. Anderson (see No. 957) in regard to species of the genera *Uromyces* and *Puccinia*, disagreeing in certain particulars. (J. F. J.)

963. Dietel, P. **Ueber Puccinia conglomerata (Str.) und die auf Senecio und einigen verwandten Compositen vorkommenden Puccinien.** <Hedwigia, Bd. XXX, Dresden, Sept. u. Oct., 1891, pp. 291–297, pl. 1 (XXXVI).

Gives critical notes on all *Pucciniæ* occurring on Senecio and related Compositæ. Many different species have been placed in *Puccinia conglomerata* (Str.) by recent writers. *P. Senecionis* Lib. (of which *P. subcircinata* Ell. and Ev. is a synonym) and *P. expansa* Link. should be restored to specific rank. *Puccinia glomerata* Grev., is thought to be probably nothing but the typical *P. expansa; P. tranzschelii* n. sp. on *Cacalia hastata* L., near Schenkursk (Prov. Archangelsk), Russia, is described, and in a supplementary note to the article it is reported from Siberia on the strength of a specimen collected by Martianow. *P. conglomerata*, *P. tranzschelii*, *P. senecionis*, *P. expansa*, and *P. uralensis* are figured in outline. (W. T. S.)

964. Ellis, J. B, and Everhart, B. M. **New species of Uredineæ and Ustilagineæ.** <Jour. Mycol., vol. VI, Washington, Jan. 6, 1891, pp. 118–121.

The following new species are described: *Schrœteria annulata* in ovaries of *Andropogon annulatus; Schizonella subtrifida* on *Circium ochrocentrum; Ustilago diplospora* in ovaries of *Panicum sanguinale; U. montaniensis* on *Muhlenbergia glomerata; Æcidium micropunctum* on *Castilleia; Æ. eurotiæ* on *Eurotia lanata; Uromyces scaber* on grass; *Puccinia arabicola* on *Arabis* sp.; *P. araliæ* on *Panax trifolium; P. xanthiifolia=P. compositarum* Schlect., on *Iva xanthiifolia*, and *P. consimilis* on *Sisymbrium linifolium.* (J. F. J.)

965. Eriksson, J. **Noch einmal Æcidium Astragali, Eriks.** <Bot. Notizer, Lund, 1891, pp. 40–43.

Finds it necessary to change name of *Æcidium astragali* Eriks., on *Astragalus alpinus*, published by the author in fac. VI, No. 285 of his Fung. par. scand. on account of De Thümen's species of same name in M. Univ., No. 1117, on *Astr. melilotoides.* Selects *Æcidium astragali-alpini* as new name and gives following synonomy: *Æ. astragali*, Eriks., Fung. pár. sc., VI, No. 285. *Æ. carneum*, Nees., Bot. Notizer, 1884, p. 155. *Uromyces lapponicus*, Lagerh. (Æcidium form), Bot. Notizer, 1890, p. 274. Does not consider his species as æcidial form of Lagerheim's *Uromyces.* (Theo. Holm.)

966. Galloway, B. T. **A new pine leaf rust.** <Jour. Mycol., vol. VII, Washington, Sept. 10, 1891, p. 44.

Describes a new species under name of *Coleosporium pini.* (J. F. J.)

967. Ellis, J. B., and Tracy, S. M. **New species of Uredineæ.** <Jour. Mycol., vol. VII, Washington, Sept. 10, 1891, p. 43.

Describe the following new species: *Puccinia hemizoniæ* on *Hemizonia truncata; Æcidium oldenlandianum* on *Houstonia cærulea;* and *Æ. malvastri* on *Malvastrum munroanum.* (J. F. J.)

968. Hariot, P. **Notes critiques sur quelques Uredinees de l'Herbier de Muséum de Paris.** <Bull. Soc. Mycol., France, vol. VII, Paris, Sept. 30, 1891, pp. 141–149.

Notes on type specimens in cryptogamic herbarium of the Paris Museum and of the Faculty of Science at Marseilles, together with a description of several new species from different places. The following new species are described: *Uromyces cachrydis* on stems and petioles of *Cachrys; Melampsora passifloræ* on *Passiflora lutea; Puccinia longicornis* Pat. & Har. on leaves of *Bambusa; Uredo cornui* on leaves of *Euphorbia; Æcidium dichondræ* on leaves of *Dichondra; Æ. vieillardi* on leaves of *Rubiaceæ.* The following changes in nomenclature are suggested: *Uromyces acutatus* Fckl. is restricted to the host *Gagea arvensis* and is a synonym of *U. ornithogali* (Schlect.) Lév. *Puccinia porri* (Sow.) Wint. should include *Uredo ambigua* DC., *Uromyces ambiguus* (DC.) Fckl. and *Puccinia mixta* Fckl. *Melampsora pistaciæ* Cast., does not belong to the *Uredineæ. Melampsora petrucciana* Cast. is not on *Glechoma* and equals *M. helioscopiæ* Pers. *Cronartium gramineum* Mont. is a gall. *Puccinia galii* (Pers.) Schw. should include as synonyms *P. crucianellæ* Desmaz., *Uredo galii-veri* Cast., and *Æcidium galii* Pers. *P. hieracii* (Schum.) Mart. includes *P. hieracii-murorum* Cast. and *P. centaurea-aspera* Cast. on *Centaurea aspera. P. centaurea-aspera* Cast. on *Picnomon acarna* belongs to *P. tanacei. Puccinia bullata* (Pers.) Schroet. includes *P. apii-graveolentis* Cast., *P. apii* Cda., *P. apii* Desmaz., and *P. castagnei* Thüm. *P Berkleyi* Pass. is a synonym of *P. vincæ* Cast. *P. alii* Cast. on *Allium ampelopnasum=P. allii* (DC.) Rud. *P. kraussiana* Cke. can not be maintained and is merged into *P. ferruginea* Lév. *P. arenariæ* (Schum.) Schroet. has as synonyms *P. montagnei* de Toni, *P. herniariæ* Ung., and *P. corrigiola* Chev. The synonymy of *P. cnicioleracei* Desm is as follows: *P. asteris* Duby, *P. cirsiorum* Desmaz., *P. silphii* Schw., *P. xanthii* Schw.? *P. leveilleana* de Toni was previously described by Montagne as *P. leveillei. P. jurinæ* Rab. is only a variety of *P. pulvinata* Rab., and this should probably include *P. jurinæ* Cke. *Coleosporium baccharidis* (Lev.) Cke. includes *Uredo baccharidis* Lev., *Col. baccharidis* Cke., and the so-called Æcidium portion of *P. evadens* Wint. (No. 3208, F. Europæi). *Uredo baccharidis* Speg. is a synonym of *U. balansæ* Har. *U. avenæ* Cast. and *U. glumarum* Rob. are synonyms of *P. rubigo-vera* (DC.) Wint. *Uredo beticola* Bell.=*Uromyces betæ* (Pers.) Kühn. *Uredo camphorosmæ* Cast.=Uredo spores of *Uromyces salicorniæ* (DC.) DBy. *Uredo cucubali* Desmaz. and *U. lychnidearum* Desm. are the Uredo form of *P. silenes* Schrœt. *Uredo holoschœni* Cast. is on *Juncus* and equals *Uromyces junci* (Desm.) Tul. *Uredo ilicis* Cast.=*U. quercus* de Brond. It is perhaps a *Melampsora. Uredo kleiniæ* Mont.=*Coleosporium senecionis* (Pers.) Fr. *Uredo phyllariæ* Cast. on *Phyllirea angustifolia=Cœoma phillyræ* (Cke.) Thum. and Bagn., but Castagne's name is the older. *Uredo poæ-sudeticæ* West. is the Uredo of *P. poarum* Niels. *P. pruni* Pers. includes *Uredo pruni* Cast., *Uromyces amygdali* Passer., and *Uredo castagnei* Mont. *Uredo scirpi* Cast. belongs to *Uromyces lineolatus* (Desm.) Schrœt. The same species is also in Castagne's herbarium under the name *Uredo prismaticus. Uredo tropæoli* Desm.=*Cœoma tropæoli* (Desm.) *Uredo anagyridis* Roussel=*Uromyces anagyridis* (Roussel) Roumeg. *Uredo andropogoni* Cast. corresponds exactly to *P. cesatii* Schrœt. *Uredo dianthi* Cast. is a synonym of *Uromyces caryophyllinus* (Schrank) Schrœt. *Uredo erigeronis* Requien upon *Cupularia viscosa* and *Æcidium sonchi* West, belongs to *Coleosporium sonchi* (Pers.) Lév. *Uredo lolii* Cast. belongs to *P. graminis* Pers. *Uredo polygonorum* v. *aviculare* Cast.=*Uromyces polygoni* (Pers.) Fckl. *Uredo satureiæ* Cast.=*P. menthæ. Uredo tumida* Gachet on *Populus balsamifera=Melampsora populina* (Jacq.) Lév. *Uredo berberidis* Lév. and probably *Uredo œcidiiformis* Speg. are synonyms of *Cœoma berberidis* (Lév.) Har. *Uredo cyclostoma* Lév.=*Cœoma cyclostoma* (Lév.) Har. *Æcidium fœniculi* Cast.=*Æcidium ferulæ* Roussel. *Æcidium glechomæ* Gaillard can not be distinguished from an *Æcidium* found by Brébison on *Teucrium scorodonia. Æcidium trifolii-repentis* Cast. is the *Æcidium* of *Uromyces trifolii* (Hedw.) Lév. *Æcidium scorzoneræ* Cast. belongs to *Puccinia tragopogonis* (Pers.) Cda. (E. A. S.)

969. HARIOT, P. **Sur quelques Urédinées.** <Bull. Soc. Mycol., France, vol. VII, Paris, Dec. 31, 1891, pp. 195–202.

The author has examined a large number of Montagne's species, and in this article gives notes and complete descriptions of many species. Gives the following notes on synonomy: *Æcidium scillinum* D. R. & Mont. does not seem to differ from the *Æcidium* of *Uromyces erythronii* and is equally like *Æ. asphodeli* Cast. *Uromyces sisyrinchii* Mont. is the uredospore state of *Puccinia sisyrinchii* Mont. *Uromyces placentula* Mont. was communicated by Berkeley under the name *Uredo placentula*, but is only the uredo of *Puccinia pruni* Pers. *Uredo pruni* Mont. can not be separated from *Puccinia pruni* Pers. *Uredo microcelis* Mont. is a poorly developed specimen of *Uromyces limonii* (DC.) Lév., and *Uredo statices* B. & C. (North Pacific expl. expd., No. 135) belongs to the same species. *Uredo planiscula* Mont. is the uredospore state of *Uromyces rumicis* (Schum.) Wint. *Uredo bellidis* D. R. & Mont. and a fungus in Montagne's herbarium under the name of *Æcidium purpurascens* D. R. and Mont. are both forms of *Puccinia hieracii* (Schum.) Mart. Besides these species from Montagne's herbarium the article also contains notes on some other Uredineæ studied by the author. *Uredo japonica* B. & C. (Pacific expd., No. 134) = *Uromyces japonicus* Berk. *Puccinia cardui* Plowright should be referred to *P. cnici-oleracei* Desmaz. (E. A. S.)

970. HARIOT, P. **Uromyces des légumineuses.** <Rev. Mycol., vol. XIV, Toulouse, Jan. 1, 1892, pp. 11–22.

A list of 35 species of Uromyces on Leguminosæ, with notes and in some cases full descriptions. The number of species as usually counted is reduced in some cases by uniting several species. The following changes are made: *Uromyces fabæ* (Pers.) DBy. = *Uromyces viciæ* Fckl., *U. lathyri* Thüm. on *Lathyrus pisiformis*, *sylvestris*, and *Vicia*, *Uredo longipes* Lasch. or *leguminosarum*, and *Uromyces ervi* West. *Uromyces trifolii* (Hedw.) Lév. = *Uredo fallens* Desm., *Uromyces cytisi* Thüm. on *Caraganum purpureum*, *Uredo caraganæ* Thüm. on *Caraganum arborescentem*, *Uromyces onobrychidis* Lév., *Uredo onobrychii* Desm., and *Æcidium elegans* B. & C. on *Trifolium carolinianum*. *Uromyces appendiculatus* (Pers.) Lk. = *Uredo-leguminum* Desm., *Uromyces dolichi* Cke., *Æcidium candidum* Bonorden, *Cæoma apiculosum* Bonord. *Uromyces pisi* (Pers.) DBy. = *Uredo lathyri* Bellynck, *Uredo viciæ-craccæ* Bellynck. *Uromyces striatus* Schr. = *Uromyces trifolii* Fckl. Fung. Rhen. No. 386. *Uromyces lespedezæ* (Schw.) Pk. = *U. macrosporus* B. & C.; *Uromyces solidus* B. & C. *Uromyces lupini* B. & C. = *Uromyces astragali* var. *lupini* B. & C. *Uredo lupini* B. &. C. This species is distinct from *Uromyces lupini* Sacc. and from *U. astragali*. *Uromyces astragali* (Opiz.) Sacc. includes as synonyms *U. oxytropidis* Kng. in Rab. F. Eur. No. 1793; *U. cytisi* Schr. in ibid No. 2671; *Uredo oxytropidis* Pk. Winter has united some species to *Uromyces genistæ-tinctoriæ*, which should be separated from it—*U. anthyllidis*, *U. anagyridis*, *U. ononidis*, *U. trigonellæ*, *Uromyces*, and *Uredo lupini* (not B. & C.)—which ought to be referred to the following species: *Uromyces astragali*, *U. punctatus*, *U. oxytropidis*, which belong to *U. astragali*. *Uromyces pteleacearum* Rab. F. Eur. No. 93 has the host wrongly named, and is *U. genistæ* on *Laburnum*. The following must be omitted from the synonyms of *U. genistæ-tinctoriæ*: *U. cytisi* Schroet. F. E. No. 2731; *U. cytisi* Thüm. M. V. No. 1728; *Uredo caraganæ* on *Carag. arborescens*, *Uromyces onobrychidis* Lev. *Uromyces anthyllidis* = *U. anagyridis* (Roussel) Roum.; *U. lupini* Sacc. (not B. & C.); *U. ononidis* Passer, in Rab. F. Eur. No. 1792; *U. trigonellæ* Passer in Thüm. H. Œcon. No. 118; *U. trigonellæ* Pat. *Uromyces minor* Schroet. should include *U. trifolii* (Wettstein) on *Trif. montanum* in Fl. Excicc. Austro-Hung. No. 1563. *Uredo hedysari* Thüm. M. V. No. 1932 on *Hedysarum setigerum*, from Siberia, does not belong to *Uromyces hedysari* (DC.) Fckl., but to *Uromyces astragali*. *Urom. haszlinskii* de Toni should be added to the synonyms of the latter. *Uromyces lapponicus* Lagerh. = *Æcidium astragali* Thüm. M. V., No. 1117; *Æ. astragali* Eriksson, F. par. Scand. No. 285; *Æ. astragali-alpini* Eriks., ibid.; *Æ. carneum*, de Lagerh.; *Æ. oxytropidis* Thüm. The following species are excluded: *U. mucunæ* Rab., *U. sphæropleus* Cke., *U. pseudarthriæ* Cke., *U. versatilis* Pk., *U. tepperianus* Sacc. (E. A. S.)

971. HISINGER, EDUARD. **Puccinia malvacearum, Mont. hunnen till Finland, 1890.** <Bot. Notiz. Lund, 1891, pp. 44–45.

Notes spread of species from Chili, where first discovered, in 1852, to various parts of Europe. Quotes Eriksson as reporting it in Aragonia in 1869, as appearing in Bordeaux in 1871, in England in 1873, as spreading through Germany to Austria, Italy, Holland, and Denmark, only appearing in Sweden in 1882, and not reaching the northern part before 1887. Finally (1890) reports it from Finland. (Theo. Holm.)

972. HOWELL, J. K. **The trimorphism of Uromyces trifolii (Alb. and Schw.), Wint.** <Proc. Am. Asso. Adv. Sci., vol. XXXIX, July, 1891, Salem, Mass., pp. 330–331.

Gives results of experiments, showing that the *Æcidium* growing on clover is a form of *Uromyces trifolii*. (See Nos. 151 and 209.) (J. F. J.)

973. LAGERHEIM, G. DE. **Om förekomsten af europeiska Uredinéer på Quito's högslätt.** <Bot. Notiser, Lund, 1891, pp. 63–66.

The author has found *Puccinia coronata* on specimens of *Avena*, the seeds of which had been introduced from Europe. Calls attention to the fact that none of the species of *Rhamnus*, said to be the bearers of the Æcidium form, have yet been observed in Ecuador. The only possible explanation of the occurrence of this *Puccinia* in Ecuador will therefore be to suppose that the Æcidium-form has been omitted entirely. Similar observations have been made by Plowright (The connection of wheat mildew (*Puccinia graminis* Pers.) with the Barberry-Æcidium (*A. berberidis* Gmel.), Records of the Woolhope Transactions, Hereford, 1887), who succeeded in infecting young plants of wheat directly with sporidia of *Puccinia graminis*. This last fungus has also been found in Ecuador, although the species of *Berberis* and *Mahonia*, upon which the Æcidium form is said to occur, are wanting. The author has found, however, an Æcidium upon *Berberis glauca*, but this seems to belong to a *Diorchidium*, hitherto unknown, and occurring on the same *Berberis*. The author describes a new species, *Fusarium uredinis*, parasitic on the Uredo form of *Puccinia graminis*. (Theo. Holm.)

974. LAGERHEIM, G. DE. **Pucciniosira, Chrysospora, Alveolaria und Trichospora, vier neue Uredineen-Gattungen mit tremelloider Entwickelung. (Vorläufige Mittheilung).** <Ber. d. deutsch. bot. Gesell., 9. Jahrg., heft 10, Berlin, Jan. 24, 1892, pp. 344–348.

Gives a preliminary notice of four interesting new genera of tremelloid *Uredineæ*. *Pucciniosira* resembles *Endophyllum*, but has two-celled smooth spores. Two species are described. *P. triumfettæ* on leaves of *T.* sp. in Equador and on *T. abutiloides* in Brazil has colorless spores, which have attached to them the empty intermediate cell and do not fall apart into two cells in germinating. Only teleutospores are described. The second species, *P. solani* on leaves of *Solanum* sp. in Equador, differs much from the first; the spores are produced in chains which adhere to each other laterally. The spores are orange yellow and in germinating fall apart into two cells. The intermediate cells disappear early in the development of the fungus and nothing can be seen of them when the spores are mature. Spermogonia and teleutospores occur. In a footnote it is mentioned that a *Leptopuccinia* occurs on *Cestrum*, and another on *Solanum* in Equador, making with *Pucciniosira* three tremelloid *Uredineæ* known on the family Solanaceæ, though none were previously known. *Chrysospora* has bright red sori containing teleutospores like *Puccinia* in structure. In germinating each cell divides into four segments, each of which produces a large sporidium on the end of a unicellular promycelium. The genus resembles, therefore, a *Coleosporium* in which the teleutospores become segmented just before germination. Spermogonia and teleutospores occur. A single species, *C. gynoxidis*, is described which occurs on leaves or occasionally on young shoots of *Gynoxis pulchella* DC. and *G. buxifolia* DC. in Equador. *Alveolaria* produces cylindric ringed columns consisting of a series of disk-like teleutospores which are composed of many prismatic cells. The cells have a smooth membrane. The spore disks ripen in basipetal order and are loosened in germination, which proceeds as in *Puccinia*. Only teleutospores are produced. Two species are described. The first, *A. cordiæ*, occurs on leaves of *Cordia* sp. in Equador and has spore-disks 120–150 μ wide and 40–50 μ high, consisting of 30 to 60 cells which have yellowish walls and colorless cell contents. The second, *A. andina*, occurs on a very different *Cordia* in Equador and has spore-disks 180–210 μ wide and about 70 μ high, composed of very numerous cells which have bright orange-colored contents. *Trichospora* has filiform orange-yellow sori similar in structure to those of *Cronartium* and composed of more or less spool-shaped teleutospores and sterile cells. The membrane of the teleutospores is colorless and thickened at the ends; the contents are orange red. The sterile cells, which occur among the teleutospores, are very narrow and long and contain a reddish cell content. The germination of the teleutospores is very different from that of *Cronartium*. The young spores are unicellular, but when ripe are divided by three delicate septæ into four cells, each of which produced in germinating a unicellular promycelium with a single sporidium. One species, *T. tournefortiæ*, is described. It is very common in Equador on all parts of two species of *Tournefortia*. Both spermogonia and teleutospores are produced. The spermogonia are unusually large and have spermatia with red cell contents. (W. T. S.)

975. MAGNUS, P. **Eine Bemerkung zu Uromyces excavatus (DC.) Magn.** <Hedwigia, Bd. xxx, Dresden, Juli u. Aug., 1891, pp. 196–197.

States that the name of the fungus should be *Uromyces excavatus* (DC.) Magn., not *U. excavatus* (DC.) Berk. It is different from *U. excavata* (DC.) of Berkley and of Cooke, which is really *U. tuberculatus* Fckl. (W. T. S.)

976. NEWCOMBE, F. C. **Perennial mycelium of the fungus of blackberry rust.** <Jour. Mycol., vol. VI, Washington, Jan. 6, 1891, p. 106, pl. V, VI.

Describes features presented by blackberry cane affected with rust, *Cæoma nitens*. Concludes mycelium to be perennial (see No. 822). (J. F. J.)

977. PIROTTA, R. **Sulla Puccinia gladioli Cast. e sulle Puccinie con parafisi.** <Nuovo Gior. Bot. Ital. (Bull. d. Soc.), vol. XXIII, Firenze, 5 Ottobre, 1891, pp. 578–581.

Records *Puccinia gladioli* Cast. on *Romulea ramiflora* Ten., a new host, as possessing paraphyses. Refers to omission of the species from Schroeter and Winter, and imperfect description of geographical distribution by Saccardo & Celotti, giving corrections and full synonomy. Discusses presence of paraphyses in Puccineæ, preferring to consider them as constituting secondary characters only. Adds list of species with paraphyses as follows: *P. anemones-virginianæ* Schw., *P. gladioli* Cast., *P. virgaureæ*, *P. allii*, *P. polygoni-amphibii* Pers., *P. sonchi* Rab., *P. pruni-spinosæ* Pers., *P. rubigo-vera*, *P. cordæ* Bagn., *P. gibberosa* Lagerh. (D. G. F.)

(See also Nos. 692, 723, 736, 742, 764, 864, 873, 895, 923, 925, 979, and 998.)

VII.—USTILAGINEÆ.

978. ELLIS, J. B., & ANDERSON, F. W. **A new Ustilago from Florida.** <Jour. Mycol., vol. VI, Washington, Jan. 6, 1891, pp. 116–117.

Describe new species on *Heteropogon melanocarpa* as *Ustilago nealii*. (J. F. J.)

979. PIROTTA [R.]. **[Due funghi non comuni in Italia.]** <Nuovo Gior. Bot. Ital. (Bull. d. Soc.), vol. XXIII, Firenze, 6 April, 1891, p. 296.

Notice by secretary of society that Pirotta illustrated briefly before the Society *Ustilago panici-miliacei* on millet, and *Puccinia grisea* on *Globularia vulgaris*, noting them as rare in Italy. (D. G. F.)

980. PIROTTA, R. **Sull'Urocystis primulicola Magnus in Italia.** <Nuovo Gior. Bot. Ital. (Bull. d. Soc.), vol. XXIII, Firenze, 1 Luglio, 1891, p. 502.

Calls attention to error in Godfrin's article in Bull. Soc. Bot., France, t. XXXVIII, 1891, p. 68, in which the author's paper in N. Gior. Bot. Ital., 13, 1881, p. 235, is given as authority for presence of the fungus in Italy, when in fact the material referred to in the paper was sent to Pirotta from near Gotha by DeBary. Adds that the fungus has been recorded by Cocconi and Morini in 1886 from near Bologna, and published in Mem. Acad. Sc. di Bologna, ser. IV, t. VI, p. 373. (D. G. F.)

(See also Nos. 692, 698, 716, 723, 877, 923, 957, and 964.)

VIII.—ASCOMYCETES.

a.—Gymnoasci.

981. MASSALONGO, C. **Sulla scoperta in Italia della Taphrina epiphylla Sadebeck.** <Nuovo Gior. Bot. Ital. (Bull. d. Soc.), vol. XXIII, Firenze, 1 Luglio, 1891, pp. 325-327.

Reports the discovery of the species in the province of Verona near Bolca, and gives synonomy of the species, referring to Sadebeck's work on irritant action of parasite on host. (D. G. F.)

b.—Perisporiaceæ.

(See No. 764.)

c.—Sphæriaceæ.

982. [Anon.] **The Chinese insect-fungus drug.** <Insect Life, vol. IV, Washington, Dec., 1891, pp. 216-218, fig. 2.

Refers to *Cordyceps chinensis*, a fungus infesting grubs and used in China as a medicine. Quotes account given by A. C. Jones, U. S. consul at Chinkiang, China. (J. F. J.)

983. FAIRMAN, C. E. **Observations on the development of some fenestrate sporidia.** <Jour. Mycol., vol. VI, Washington, May 14, 1890, pp. 29-31.

Describes development of sporidia in *Fenestella amorpha*, *Patellaria fenestrata*, and *Camarosporium subfenestratum*. (J. F. J.)

984. HALSTED, B. D. **Ergot and ergotism.** <Cult. and Country Gent., vol. LVI, Albany, Oct. 29, 1891, p. 871, fig. 1.

Gives popular exposition of the life history of *Claviceps pupurea* Tul., with methods of prevention of ergotism by careful cutting of suspected grain while in the bloom. (D. G. F.)

985. MASSEE, GEORGE. **A new Cordyceps.** <Ann. of Bot., vol. V, London, Nov., 1891, pp. 510-511, fig. 5.

Describes *C. sherringii*, n. sp., parasitic on an ant from Granada, S. America. Discusses relation of species to others in same genus and in *Oomyces*, *Epichloe*, and *Claviceps*. Mentions particularly *Cordyceps robertsii* from New Zealand. (J. F. J.)

986. REHM. **Die Discomyceten-Gattung Ahlesia Fuckel und die Pyrenomyceten-Gattung Thelocarpon Nyl.** <Hedwigia, Bd. XXX, Dresden, Jan. u. Feb., 1891, pp. 1-12.

Ahlesia is according to the author not a *Discomyceie*, as Fuckel thought, but a hypocreaceous *Pyrenomycete* closely allied to *Chilonectria* and *Aponectria* (which in his estimation should not be separated). The genus *Thelocarpon* of Nylander placed heretofore in pyrenocarpous lichens is really the same as *Ahlesia*, and being an older name must be adopted and placed in Hypocreaceæ. The green gonidia found often in the base of the perithecia are looked upon as algæ, either living in symbiose with the fungus or accidentally present. On pages 4-12 is given a descriptive monograph of the 16 known species of *Thelocarpon*. *Ahlesia lichenicola* Fuckel is placed in the genus for the first time as *T. ahlesii* Rehm. (W. T. S.)

987. STARBÄCK, K. **Bidrag till Kännedomen om Sveriges ascomycetflora.** <Bihang till Kgl. Svenska Vetenskaps Akad. Handlingar, vol. XVI, Afdelning 3, 1891, Stockholm, pp. 1-15, pl. 1.

The following are described and figured as new: *Diaporthe rehmiana* on *Ulmus montana; Leptosphæria lasiosphærioides* on *Aconitum lycoctonum; Herpotrichia mucilaginosa* on *Juniperus communis; Cryptoderis oligotheca* on *Thalictrum alpinum; Sphærulina dryadis* on *Dryas octopetala; Starbäckia* n. gen.; *S. pseudotriblidioides* on pine wood. (Th. Holm.)

(See also Nos. 736, 740, 753, 764, and 769.)

d.—Discomycetes.

988. BOUDIER, EM. **Description de trois nouvelles espèces de Pezizes de France de la section des Operculées.** <Bull. de la Soc. Mycol., France, vol. VII, Paris, Dec. 31, 1891, pp. 214-217, pl. 1 (XV).

Describes *Disciotis maturescens*, *Galactinia michelii*, and *Sepultaria nicæensis*. Adds notes as to habitats, etc. (E. A. S.)

989. OUDEMANS, C. A. J. A. **Phacidium pusillum Libert.** <Hedwigia, Bd. xxx, Dresden, Sept. u. Oct., 1881, pp. 248-250.

The author found specimens and investigated them in the fresh condition in the summer of 1891. As a result of his studies he amends and completes Libert's description and corrects some statements of Roumeguère and Saccardo regarding the species. (W. T. S.)

(See also Nos. 950 and 986.)

IX.—IMPERFECT AND UNCLASSIFIED FORMS.

a.—Hyphomycetes and Stilbeæ.

990. ATKINSON, GEO. **Some Cercosporæ from Alabama.** <Jour. Elisha Mitchell Scien. Soc., vol. VIII, pt. 2, Feb. 24, 1892 [separate pp. 36].

Discusses the position of *Cercospora* in classification and mentions the forms under which it is known. Gives a brief sketch of life history of genus and notes paucity of knowledge in relation to complete life history of many species. Gives description of 79 species, with a few notes on synonomy and describes the following as new: *Cercospora tephrosiæ* on *Tephrosia hispidula; C. truncatella* on *Passiflora incarnata; C. agrostidis* on *Agrostis* sp.;? *C. avicularis* Wint., var. *sagittati*, on *Polygonum sagittatum; C. anthelmintica* on *Chenopodium ambrosioides* var. *anthelminticum; C. jussiææ* on species of *Jussiæa; C. fusimaculans* on *Panicum dichotomum; C. setariæ* on *Setaria glauca; C. asterata* on *Aster* sp.?; *C. richardiæcola* on *Richardia africana; C. alabamensis* on *Ipomœa purpurea; C. flagellifera* on *Galactia pilosa; C. papillosa* on *Verbena* cult.; *C. solanicola* on *Solanum tuberosum; C. ludwigiæ* on *Ludwigia alternifolia; C. virginianæ* on *Diodia virginiana; C. crinospora* on *Rhyncospora glomerata; C. atromarginalis* on *Solanum nigrum; C. tropæoli* on *Tropæolum* cult.; *C. tesselata* on *Eleusine ægyptica; C. seriata* on *Sporobolus asper; C. althæina*, var. *modiolæ*, on *Modiola multifida; C. clitoriæ* on *Clitoria mariana; C. diospyri*, var. *ferruginosa; C. jatrophæ* on *Jatropha stimulosa; C. macroguttata* on *Chrysopsis graminifolia; C. pinnulæcola* on *Cassia nictitans; C. erythrogena* on *Rhexia mariana*, etc,; *C. rigospora* on *Solanum nigrum* (?); *C. catenospora* on *Sambucus canadensis*, and *C. erechtites* on *Erechtites hieracifolia*. (J. F. J.)

991. MACMILLAN, C. **Note on a Minnesota species of Isaria and an attendant Pachybasium.** <Jour. Mycol., vol. VI, Washington, Sept. 10, 1890, pp. 75-76.

Describes features presented by *Isaria sphingum*, parasitic on a tussock moth, and *Pachybasium hamatum* (?), which appeared in a gelatin culture tube. Queries if the latter be not a form of the *Isaria*. (J. F. J.)

992. MASSEE, GEORGE. **A new genus of Tubercularieæ.** <Ann. of Bot., vol. v, London, Nov., 1891, p. 509, fig. 1.

Describes *Hobsonia*, n. gen. Berk., in herb., with n. sp. *H. gigaspora* Berk. in herb. [The figure is called *H. macrospora*.] From Venezuela. (J. F. J.)

(See also, Nos. 714, 716, 742, 747, 756, 764, and 903.)

b.—Sphæropsideæ and Melanconeæ.

993. CUBONI, G. **Diagnose di una nuova specie di fungo excipulaceo.** <Nuovo Gior. Bot. Ital. (Bull. d. Soc.), vol. XXIII, Firenze, 5 Ottobre, 1891, p. 577.

Describes new genus and new species on decorticated wood of *Morus alba*, *Phæodiscula celottii*, in honor of collector. Thinks genus should form a new section of the *Phæosporeæ*. (D. G. F.)

994. ELLIS, J. B., and EVERHART, B. M. **Leptothyrium periclymeni, Desm.** <Jour. Mycol., vol. VI, Washington, Jan. 6, 1891, p. 116.

Notes occurrence of species on *Lonicera* from Ontario and proposes to call it *Leptothyrium perilcymeni*, var. *americanum*. (J. F. J.)

995. MARTELLI [U]. **[Alcuni funghi che attacano le olive.]** <Nuovo Gior. Bot. Ital. (Bull. d. Soc.), vol. XXIII, Firenze, April 6, 1891, p. 324.

Report of secretary of note presented to the society in regard to a new *Phoma* on olives likely to prove disastrous, which he proposes to call *P. pallens*, although reserving the description for a future meeting, together with that of an associated form, possibly the spermogonial form of the *Phoma*. (D. G. F.)

(See also, Nos. 716, 732, 744, 761, and 779.)

c.—Miscellaneous.

996. MUELLER, Dr. J. **Critique de "l'Étude" du Docteur Wainio.** <Rev. Mycol., vol. XIV, Toulouse, Jan. 1, 1892, pp. 33-40.

An article written at the request of the editor of the Revue for the purpose of discussing the system of classification proposed by Dr. Wainio in an article on "The natural classification and morphology of the Lichens of Brazil." The author takes issue with Dr. Wainio on the main points of the original article. He rejects the theory of symbiosis, the definition of a lichen, and the characters used as a basis of classification. (E. A. S.)

997. STANLEY-BROWN, J. **Bernardinite: Is it a mineral or a fungus?** <Am. Jour. Sci., 3d ser., vol. XLII, New Haven, July, 1891, pp. 46-50.

Gives an account of the "mineral resin" described by Silliman in 1879. Gives analysis and general description of a specimen stated by Ellis to be *Polyporus officinalis* Fr. Found on *Pinus strobus* in various localities of the United States. (J. F. J.)

(See also, Nos. 654, 716, 832, 942, 943, and 944.)

G.—MORPHOLOGY AND CLASSIFICATION OF BACTERIA.

(See Nos. 720, 745, 886, and 933.)

H.—MORPHOLOGY AND CLASSIFICATION OF MYXOMYCETES.

(See Nos. 695, 716, and 855.)

I.—EXSICCATÆ.

998. PAZSCHKE, O., **Rabenhorst-Winter. Fungi Europæi et extraeuropæi. Cent. 38, Cura Dr. O. Pazschke.** <Hedwigia, Bd. XXX, Dresden, Juli u. August, 1891, pp. 197-200.

Gives a list of the species in the 38th century of this exsiccata and reprints a note on 3704, *Urocystis hypoxidis* Thaxter, from Brazil, and the descriptions of the following new species: *Puccinia pithecocteni* II and III on leaves of *Pithecoctenum* Brazil; *Uromyces dietelianus* on leaves of *Bauhinia* (*grandiflora?*) Brazil; *Uredo celtidis* on leaves of *Celtis*, Brazil; *Dichomera elæagni* Karst. on dead branches of *Elæagnus macrophylla*, Finland. (W. T. S.)

999. REHM. **Ascomyceten fasc. xxi.** <Hedwigia, Bd. XXX, Dresden, 1891, Sept. u. Oct., 1891, pp. 250-262.

This exsiccata after a long pause necessitated by the pressure of other work has been resumed and will be continued. In this article the names of the species in fasc. XXI, with synonomy and often with critical notes, are reprinted apparently as given on the labels. This fascicle includes Nos. 1001-1050 and 146b., 682b., 69b, c., 444b., 8b. The following new species are described: *Pezizella dilutelloides* on decayed petioles of *Robinia pseudacacia* near Berlin; *Tryblidaria subtropica* (Wint.) (=*Blitrydium subtropicum* Winter Hedw., 1885, p. 263); *Cryptodiscus pusillus* (Lib.) (=*Phacidium pusillum* Libert Pl. arden, 268); *Phyllachora lagerheimiana* on living leaves of *Ilex scopulus* Panecillo, near Quito; *Strickeria tingens* Wagelin. in litt. on decorticated wood of *Fraxinus*, Switzerland; *Meliola lagerheimii* Gaillard on living leaves of *Ilex scopulorum*, Quito; *Sphærotheca gigantiascus* (Sorok. et Thüm.) Bäumler (=*Erysiphe gigantiascus* Sorok. et Thüm. Mycoth. in Sched.) on *Euphorbia palustris*, Pressburg, Hungary. (W. T. S.)

J.—TECHNIQUE.

1000. BOURQUELOT, EM. **Sur un artifice facilitant la recherche du tréhalose dans les champignons.** <Bull. Soc. Mycol., France, vol. VII, Paris, Dec. 31, 1891, pp. 208-209.

Gives a method of hastening the crystallization of trehalose by inserting in the solution a glass plate previously rubbed with a crystal of trehalose. The crystals collect about the portion of the glass thus prepared. Later they can be detached, and by scattering them crystallization will be provoked everywhere in the liquid. A footnote gives the method of first disposing of the mannite in the same solution. (E. A. S.)

1001. GAILLARD, A. **Note sur un procéde pour l'observation des champignons epiphytes.** <Bull. Soc. Mycol., France, vol. VII, Paris, Dec. 31, pp. 232-234.

Gives a method of observing the aërial parts of fungi by means of running over them a drop of collodion in solution and afterward transferring on the slide to glycerin jelly. By this means the fungus can be examined in its natural position. (E. A. S.)

1002. WAITE, M. B. **[Directions for collecting] fungi.** <U. S. Nat. Museum, Bull. No. 39, Washington, 1891, pp. 24-27.

Gives general directions for making collections of saprophytic and parasitic fungi. (J. F. J.)